Réseau MTN Francophone

Veille scientifique
Maladies tropicales négligées

Semaine 20
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Cysticercose

Optimization of In-House Indirect-ELISA & EITB Assays Employing Cysticercus cellulosae Antigens for Serological Detection and PCR Assays for Molecular Detection of Porcine Cysticercosis.

Satyaprakash K, Khan WA, Chaudhari SP, Shinde SV, Kolte SW, Pansare NR, Likhite AV.
Jan-Mar 2023
Iran J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37197077/

Background: Porcine cysticercosis, caused by metacestodes of *Taenia solium* is an important neglected zoonosis. We evaluated the presence of anti-cysticercal antibodies and *T. solium* specific DNA in pig sera and blood samples respectively collected from Maharashtra, India. Methods: A total of three antigens (Scolex Antigen (SA), Membrane Body Antigen (MBA) and Excretory-Secretory Antigen (ESA)) were prepared from metacestodes of *T. solium* and employed in an in-house developed indirect-IgG ELISA for serological screening of 1000 porcine sera samples at Department of Veterinary Public Health, Nagpur Veterinary College, Maharashtra, India. The ELISA positive sera samples were subjected to EITB Assay for detection of immunodominant peptides. An effort has been made for molecular detection of porcine cysticercosis by PCR assay targeting *large subunit rRNA* gene of *T. solium* from blood samples of the corresponding ELISA-positive pigs. Results: The overall seroprevalence of porcine cysticercosis employing SA, MBA and ESA was 12.6%, 8.7% and 12.5% respectively. The lower and medium molecular weight peptides were the most frequently recognised in EITB assay. The numbers of bands recognised in EITB assay were observed to be proportionate with the corresponding ELISA O.D. values. An amplification product of 286 bp was observed in 22.98% (20/87), 30.35% (30/99) and 17.14% (12/70) of the sero-positive samples against SA, ESA and MBA respectively. Conclusion: EITB still remains the gold standard serodiagnosis test for cysticercosis. The inclusion of a greater number of positive samples and purification of antigens may improve the diagnostic efficacy of the tests.

Prevalence of taeniosis in pig farming community in Andhra Pradesh, India.

Kothapalli SR, Md H, Krovvidi S, Chennuru S.
Juin-2023
J Parasit Dis.
https://pubmed.ncbi.nlm.nih.gov/37193495/

Dengue, chikungunya et maladie à virus Zika

COVID-19 vaccination, dengue hepatitis, and recurrent unilateral anterior uveitis.

Sanjay S, Kawali A, Mahendradas P.
Mai-2023
Indian J Ophthalmol.
https://pubmed.ncbi.nlm.nih.gov/37202968/

A 36-year-old Asian Indian male presented with redness and pain in his right eye of 1 week duration. He was diagnosed to have right acute anterior uveitis and had a history of being admitted at a local hospital for dengue hepatitis a month earlier. He had been on adalimumab 40 mg three weekly once and oral methotrexate 20 mg/week for human leucocyte antigen (HLA) B27 spondyloarthropathy and recurrent anterior uveitis. Our patient had re-activation of his anterior chamber inflammation on three distinct occasions: first, 3 weeks following recovery from coronavirus disease 2019 (COVID-19), the second after the second dose of COVID-19 vaccination, and the third after recovery from dengue fever-associated hepatitis. We propose molecular mimicry and bystander activation as the postulated mechanisms for the re-activation of his anterior uveitis. In conclusion, patients with auto-immune diseases can have recurrent ocular inflammation following COVID-19 or its vaccination or dengue fever as seen in our patient. The anterior uveitis is usually mild and responds to topical steroids. Additional immuno-suppression may not be needed. Mild ocular inflammation following vaccination should not deter individuals from getting COVID-19 vaccination.

The 2022 dengue outbreak in Bangladesh: hypotheses for the late resurgence of cases and fatalities.

Haider N, Hasan MN, Khalil I, Tonge D, Hegde S, Chowdhury MAB, Rahman M, Hossain Khan M, Ansumana R, Zumla A, Uddin MJ.
18-06-2023
J Med Entomol.
https://pubmed.ncbi.nlm.nih.gov/37202843/

Mechanism of glycoform specificity and in vivo protection by an anti-afucosylated IgG nanobody.

Gupta A, Kao KS, Yamin R, Oren DA, Goldgur Y, Du J, Lollar P, Sundberg EJ, Ravetch JV.
18-05-2023
Nat Commun.
https://pubmed.ncbi.nlm.nih.gov/37202422/

A nonstructural protein 1 capture enzyme-linked immunosorbent assay specific for dengue viruses.

Lim PY, Ramapraba A, Loy T, Rouers A, Thein TL, Leo YS, Burton DR, Fink K, Wang CI.
18-05-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/37200264/

Dengue non-structural protein (NS1) is an important diagnostic marker during the acute phase of infection. Because NS1 is partially conserved across the flaviviruses, a highly specific DENV NS-1 diagnostic test is needed to differentiate dengue infection from Zika virus (ZIKV) infection. In this study, we characterized three newly isolated antibodies against NS1 (A2, D6 and D8) from a

dengue-infected patient and a previously published human anti-NS1 antibody (Den3). All four antibodies recognized multimeric forms of NS1 from different serotypes. A2 bound to NS1 from DENV-1, -2, and -3, D6 bound to NS1 from DENV-1, -2, and -4, and D8 and Den3 interacted with NS1 from all four dengue serotypes. Using a competition ELISA, we found that A2 and D6 bound to overlapping epitopes on NS1 whereas D8 recognized an epitope distinct from A2 and D6. In addition, we developed a capture ELISA that specifically detected NS1 from dengue viruses, but not ZIKV, using Den3 as the capture antibody and D8 as the detecting antibody. This assay detected NS1 from all the tested dengue virus strains and dengue-infected patients. In conclusion, we established a dengue-specific capture ELISA using human antibodies against NS1. This assay has the potential to be developed as a point-of-care diagnostic tool.

Long lasting anti-IgG chikungunya seropositivity in the Mayotte population will not be enough to prevent future outbreaks: A seroprevalence study, 2019.

Ortu G, Grard G, Parenton F, Ruello M, Paty MC, Durand GA, Hassani Y, De Valk H, Noël H; Unono Wa Maore group.
18-05-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/37200250/

NeuN distribution in brain structures of normal and Zika-infected suckling mice.

Santamaría G, Rengifo AC, Torres-Fernández O.
18-05-2023
J Mol Histol.
https://pubmed.ncbi.nlm.nih.gov/37199896/

The C-terminal 32-mer fragment of hemoglobin alpha is an amyloidogenic peptide with antimicrobial properties.

Olari LR, Bauer R, Gil Miró M, Vogel V, Cortez Rayas L, Groß R, Gilg A, Klevesath R, Rodríguez Alfonso AA, Kaygisiz K, Rupp U, Pant P, Mieres-Pérez J, Steppe L, Schäffer R, Rauch-Wirth L, Conzelmann C, Müller JA, Zech F, Gerbl F, Bleher J, Preising N, Ständker L, Wiese S, Thal DR, Haupt C, Jonker HRA, Wagner M, Sanchez-Garcia E, Weil T, Stenger S, Fändrich M, von Einem J, Read C, Walther P, Kirchhoff F, Spellerberg B, Münch J.
17-05-2023
Cell Mol Life Sci.
https://pubmed.ncbi.nlm.nih.gov/37198527/

Antimicrobial peptides (AMPs) are major components of the innate immune defense. Accumulating evidence suggests that the antibacterial activity of many AMPs is dependent on the formation of amyloid-like fibrils. To identify novel fibril forming AMPs, we generated a spleen-derived peptide library and screened it for the presence of amyloidogenic peptides. This approach led to the identification of a C-terminal 32-mer fragment of alpha-hemoglobin, termed HBA(111-142). The non-fibrillar peptide has membranolytic activity against various bacterial species, while the HBA(111-142) fibrils aggregated bacteria to promote their phagocytotic clearance. Further, HBA(111-142) fibrils selectively inhibited measles and herpes viruses (HSV-1, HSV-2, HCMV), but not SARS-CoV-2, ZIKV and IAV. HBA(111-142) is released from its precursor by ubiquitous aspartic proteases under acidic conditions characteristic at sites of infection and inflammation. Thus, HBA(111-142) is an amyloidogenic AMP that may specifically be generated from a highly abundant precursor during bacterial or viral infection and may play an important role in innate antimicrobial immune responses.

Detection of dengue virus infection in children presenting with fever in Hawassa, southern Ethiopia.

Shimelis T, Mulu A, Mengesha M, Alemu A, Mihret A, Tadesse BT, Bartlett AW, Belay FW, Schierhout G, Dittrich S, Crump JA, Vaz Nery S, Kaldor JM.
17-05-2023
Sci Rep.
https://pubmed.ncbi.nlm.nih.gov/37198392/

Dengue fever is a mosquito-borne viral infection, with rising incidence globally. Eastern Ethiopia has had dengue fever outbreaks in recent years. However, the extent to which the infection contributes to hospital presentation among children with fever in southern Ethiopia is unknown. We examined 407 stored plasma samples collected to investigate the aetiology of fever in children aged at least 2 months and under 13 years presenting to the outpatient of the largest tertiary hospital in southern Ethiopia. We analyzed samples for dengue virus non-structural 1 antigen using enzyme-linked immunosorbent assay. The median (interquartile range) age of the 407 children examined was 20 (10-48) months, and 166 (40.8%) of the children were females. Of 407 samples analyzed, 9 (2.2%) were positive for dengue virus non-structural 1 antigen, of whom 2 were initially treated with antimalarial drugs despite having negative malaria microscopy, and 1 of the 8 patients had a persistent fever at the seventh day of follow-up time. The presence of active dengue virus infection in the study area highlights the need for studies at the community level as well as the integration of dengue diagnostics into fever-management strategies. Further research to characterize circulating strains is warranted.

Monkeypox, smallpox, FDA, and accelerated approval of vaccines - A regulatory perspective.

Sun W.
15-05-2023
Vaccine.
https://pubmed.ncbi.nlm.nih.gov/37198023/

Need for effective detection and early warnings for epidemic and pandemic preparedness planning in the context of multi-hazards: Lessons from the COVID-19 pandemic.

Kamalrathne T, Amaratunga D, Haigh R, Kodituwakku L.
15-05-2023

Int J Disaster Risk Reduct.
https://pubmed.ncbi.nlm.nih.gov/37197332/

A chikungunya virus-like particle vaccine induces broadly neutralizing and protective antibodies against alphaviruses in humans.

Raju S, Adams LJ, Earnest JT, Warfield K, Vang L, Crowe JE Jr, Fremont DH, Diamond MS.
17-05-2023
Sci Transl Med.
https://pubmed.ncbi.nlm.nih.gov/37196061/

Chikungunya virus (CHIKV) is a mosquito-transmitted alphavirus that causes epidemics of acute and chronic musculoskeletal disease. Here, we analyzed the human B cell response to a CHIKV-like particle-adjuvanted vaccine (PXVX0317) from samples obtained from a phase 2 clinical trial in humans (NCT03483961). Immunization with PXVX0317 induced high levels of neutralizing antibody in serum against CHIKV and circulating antigen-specific B cells up to 6 months after immunization. Monoclonal antibodies (mAbs) generated from peripheral blood B cells of three PXVX0317-vaccinated individuals on day 57 after immunization potently neutralized CHIKV infection, and a subset of these inhibited multiple related arthritogenic alphaviruses. Epitope mapping and cryo-electron microscopy defined two broadly neutralizing mAbs that uniquely bind to the apex of the B domain of the E2 glycoprotein. These results demonstrate the inhibitory breadth and activity of the human B cell response induced by the PXVX0317 vaccine against CHIKV and potentially other related alphaviruses.

Reconsideration of importance of the point mutation L982W in the voltage-sensitive sodium channel of the pyrethroid resistant Aedes aegypti (L.)(Diptera: Culicidae) in Vietnam.

Kawada H, Higa Y, Kasai S.
17-05-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/37195995/

C-reactive protein: An easy marker for early differentiation between leptospirosis and dengue fever in endemic area.

Maillard O, Hirschinger D, Bénéteau S, Koumar Y, Vague A, Girerd R, DiAscia L, Jabot J, Cousty J, Randrianjohany A, Bertolotti A, Raffray L.
17-05-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/37195992/

Congenital zika syndrome and family impacts: an integrative review.

Melo APL, Lyra TM, Barbosa JMV, Araújo TVB.
Mai-2023
Cien Saude Colet.
https://pubmed.ncbi.nlm.nih.gov/37194876/

In 2015, a range of congenital anomalies resulting from mother-to-child transmission of the zika virus emerged. Later called congenital zika syndrome (CZS), the condition includes microcephaly. Since then, around 4,000 children have been affected in 27 countries, with Brazil accounting for the largest proportion of cases. Family caregivers have also been affected. This study analyzes the literature on caregivers of children with CZS and how the disease has affected their everyday lives. We conducted an integrative review using the PubMed, Virtual Health Library, and Embase databases. Thirty-one articles were identified for analysis after screening. The findings were grouped into four categories: a) social impacts - changes in family relationships, life projects, and social life; b) subjective impacts - feelings of resilience, loneliness, grief, overburdening, fear, uncertainty, and spirituality and religion; c) economic and material impacts - loss of income, increased household expenses, change of residence, and unemployment; and d) health impacts - service unpreparedness, selflessness, self-care, changes in nutritional and sleep patterns, and mental health problems, including stress, anxiety and depression.

Evaluation of the inhibitory potency of anti-dengue phytocompounds against DENV-2 NS2B-NS3 protease: virtual screening, ADMET profiling and molecular dynamics simulation investigations.

Purohit P, Barik D, Agasti S, Panda M, Meher BR.
17-05-2023
J Biomol Struct Dyn.
https://pubmed.ncbi.nlm.nih.gov/37194462/

Dengue fever has been a worldwide concern, with 50-100 million new infections each year mainly due to five different serotypes of the Dengue virus (DENV). Designing a perfect anti-dengue agent that can inhibit all the serotypes by distinguishing antigenic differences is quite difficult. Previous anti-dengue researches have included chemical compounds screening against DENV enzymes. The ongoing analysis is meant for investigation of the plant-based compounds as antagonistic to DENV-2 focusing on the specific NS2B-NS3^{Pro} target, a trypsin like serine protease that cuts the DENV polyprotein into separate proteins crucial for viral reproduction. Initially, a virtual library of more than 130 phytocompounds was prepared from previously published reports of plants with anti-dengue properties, which were then virtually screened and shortlisted against the WT, H51N and S135A mutant of DENV-2 NS2B-NS3^{Pro}. The three top-most compounds were viewed as Gallocatechin (GAL), Flavokawain-C (FLV), and Isorhamnetin (ISO) showing docking scores of -5.8, -5.7, -5.7 kcal/mol for WT, -7.5, -6.8, -7.6 kcal/mol for the H51N, and -6.9, -6.5, -6.1 kcal/mol for the S135A mutant protease, respectively. 100 ns long MD simulations and MM-GBSA based free energy calculations were performed on the NS2B-NS3^{Pro} complexes to witness the relative binding affinity of the compounds and favourable molecular interactions network. A comprehensive analysis of the study reveals some promising outcomes with ISO as the topmost compound with favourable pharmacokinetic properties

for the WT and mutants (H51N and S135A) as well, suggesting as a novel anti-NS2B-NS3^{Pro} agent with better adapting characters in both the mutants.Communicated by Ramaswamy H. Sarma.

RNA-Seq of untreated wastewater to assess COVID-19 and emerging and endemic viruses for public health surveillance.

Stockdale SR, Blanchard AA, Nayak A, Husain A, Nashine R, Dudani H, McClure CP, Tarr AW, Nag A, Meena E, Sinha V, Shrivastava SK, Hill C, Singer AC, Gomes RL, Acheampong E, Chidambaram SB, Bhatnagar T, Vetrivel U, Arora S, Kashyap RS, Monaghan TM.
Juil-2023
Lancet Reg Health Southeast Asia.
https://pubmed.ncbi.nlm.nih.gov/37193348/

Prediction of human protein interactome of dengue virus non-structural protein 5 (NS5) and its downstream immunological implications.

Bhatnagar P, Bajpai P, Shrinet J, Kaja MK, Chandele A, Sitaraman R.
Juin-2023
3 Biotech.
https://pubmed.ncbi.nlm.nih.gov/37193327/

The non-structural protein 5 (NS5) is the most conserved protein among flaviviruses, a family that includes the dengue virus. It functions both as an RNA-dependent RNA polymerase and an RNA-methyltransferase and is therefore essential for the replication of viral RNA. The discovery that dengue virus NS5 protein (DENV-NS5) can also localize to the nucleus has resulted in renewed interest in its potential roles at the host-virus interface. In this study, we have used two complementary computational approaches in parallel - one based on linear motifs (ELM) and another based on tertiary structure of the protein (DALI) - to predict the host proteins that DENV-NS5 might interact with. Of the 42 human proteins predicted by both these methods, 34 are novel. Pathway analysis of these 42 human proteins shows that they are involved in key host cellular processes related to cell cycle regulation, proliferation, protein degradation, apoptosis, and immune responses. A focused analysis of transcription factors that directly interact with the predicted DENV-NS5 interacting proteins was performed, followed by the identification of downstream genes that are differentially expressed after dengue infection using previously published RNA-seq data. Our study provides unique insights into the DENV-NS5 interaction network and delineates mechanisms whereby DENV-NS5 could impact the host-virus interface. The novel interactors identified in this study could be potentially targeted by NS5 to modulate the host cellular environment in general, and the immune response in particular, thereby extending the role of DENV-NS5 beyond its known enzymatic functions.

The acute effects of nonstructural-1 protein dengue virus type 2 on wet liver weight, zonulin expression and serum zonulin.

Jatmiko SW, Hartono H, Ardyanto TD, Indarto D.
Avr-2023
Iran J Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37193240/

Opportunities for Improved Dengue Control in the US Territories.

Hernandez-Romieu AC, Adams LE, Paz-Bailey G.
16-05-2023
JAMA.
https://pubmed.ncbi.nlm.nih.gov/37192216/

Epidemiologic Trends of Dengue in U.S. Territories, 2010-2020.

Ryff KR, Rivera A, Rodriguez DM, Santiago GA, Medina FA, Ellis EM, Torres J, Pobutsky A, Munoz-Jordan J, Paz-Bailey G, Adams LE.
19-05-2023
MMWR Surveill Summ.
https://pubmed.ncbi.nlm.nih.gov/37192141/

Using Baidu Index Data to Improve Chickenpox Surveillance in Yunnan, China: Infodemiology Study.

Wang Z, He J, Jin B, Zhang L, Han C, Wang M, Wang H, An S, Zhao M, Zhen Q, Tiejun S, Zhang X.
16-05-2023
J Med Internet Res.
https://pubmed.ncbi.nlm.nih.gov/37191983/

Background: Chickenpox is an old but easily neglected infectious disease. Although chickenpox is preventable by vaccines, vaccine breakthroughs often occur, and the chickenpox epidemic is on the rise. Chickenpox is not included in the list of regulated communicable diseases that must be reported and controlled by public and health departments; therefore, it is crucial to rapidly identify and report varicella outbreaks during the early stages. The Baidu index (BDI) can supplement the traditional surveillance system for infectious diseases, such as brucellosis and dengue, in China. The number of reported chickenpox cases and internet search data also showed a similar trend. BDI can be a useful tool to display the outbreak of infectious diseases. Objective: This study aimed to develop an efficient disease surveillance method that uses BDI to assist in traditional surveillance. Methods: Chickenpox incidence data (weekly from January 2017 to June 2021) reported by the Yunnan Province Center for Disease Control and Prevention were obtained to evaluate the relationship between the incidence of chickenpox and BDI. We applied a support vector machine regression (SVR) model and a multiple regression prediction model with BDI to predict the incidence of chickenpox. In addition, we used the SVR model to predict the number of chickenpox cases from June 2021 to the first week of April 2022. Results: The analysis showed that there was a close correlation between the weekly number of newly diagnosed cases and the BDI. In the search terms we collected, the highest Spearman correlation coefficient

was 0.747. Most BDI search terms, such as "chickenpox," "chickenpox treatment," "treatment of chickenpox," "chickenpox symptoms," and "chickenpox virus," trend consistently. Some BDI search terms, such as "chickenpox pictures," "symptoms of chickenpox," "chickenpox vaccine," and "is chickenpox vaccine necessary," appeared earlier than the trend of "chickenpox virus." The 2 models were compared, the SVR model performed better in all the applied measurements: fitting effect, R^2=0.9108, root mean square error (RMSE)=96.2995, and mean absolute error (MAE)=73.3988; and prediction effect, R^2=0.548, RMSE=189.1807, and MAE=147.5412. In addition, we applied the SVR model to predict the number of reported cases weekly in Yunnan from June 2021 to April 2022 using the same period of the BDI. The results showed that the fluctuation of the time series from July 2021 to April 2022 was similar to that of the last year and a half with no change in the level of prevention and control. **Conclusions:** These findings indicated that the BDI in Yunnan Province can predict the incidence of chickenpox in the same period. Thus, the BDI is a useful tool for monitoring the chickenpox epidemic and for complementing traditional monitoring systems.

Zika Virus Infection Induces Interleukin-1β-Mediated Inflammatory Responses by Macrophages in the Brain of an Adult Mouse Model.

Jeong GU, Lee S, Kim DY, Lyu J, Yoon GY, Kim KD, Ku KB, Ko J, Kwon YC.
16-05-2023
J Virol.
https://pubmed.ncbi.nlm.nih.gov/37191498/

Monkeypox Virus and Other Emerging Outbreaks: An Overview and Future Perspective.

Hamdana AH, Mohsin H, Habib Tharwani Z, Masood W, Furqana AQ, Sohail A, Durdana AR, Ashraf MT, Uddin N, Islam Z, Essar MY, Marzo RR, Habib Z.
Jan-Dec 2023
Inquiry.
https://pubmed.ncbi.nlm.nih.gov/37190997/

Monkeypox (MPX) is a zoonotic disease caused by the MPX virus from the poxviridae family of orthopoxviruses. Typically, endemic in central and west Africa, it has now become a matter of concern since cases have been reported in non-endemic countries around mid-June 2022, especially in the European region, with the transmission not related to travel. The diagnosis is made by PCR testing of the skin lesions. Even though treatment is symptomatic, antiretrovirals, such as tecovirimat, are used in severe cases. Vaccination with second and third generation vaccines is approved for prophylaxis in high risk individuals. Unfortunately, these options of treatment and prevention are only available in high income countries at the moment. This review, through a thorough literature search of articles from 2017 onward, focuses on epidemiology, clinical manifestations, challenges, treatment, prevention and control of MPX virus and how they can be corelated with other viral outbreaks including COVID-19, Acute Hepatitis of unknown origin, Measles and Dengue, to better predict and therefore prevent its transmission. The previous COVID-19 pandemic increased the disease burden on healthcare infrastructure of low-middle income countries, therefore, this recent MPX outbreak calls for a joint effort from healthcare authorities, political figures, and NGOs to combat the disease and prevent its further spread not only in high income but also in middle- and low-income countries.

Rational design of B-cell and T-cell multi epitope-based vaccine against Zika virus, an in silico study.

Ganji M, Bakhshi S, Ahmadi K, Shoari A, Moeini S, Ghaemi A.
16-05-2023
J Biomol Struct Dyn.
https://pubmed.ncbi.nlm.nih.gov/37190978/

NLRP3 Inflammasome's Activation in Acute and Chronic Brain Diseases-An Update on Pathogenetic Mechanisms and Therapeutic Perspectives with Respect to Other Inflammasomes.

Chiarini A, Gui L, Viviani C, Armato U, Dal Prà I.
23-03-2023
Biomedicines.
https://pubmed.ncbi.nlm.nih.gov/37189617/

Salivary Detection of Zika Virus Infection Using ATR-FTIR Spectroscopy Coupled with Machine Learning Algorithms and Univariate Analysis: A Proof-of-Concept Animal Study.

Oliveira SW, Cardoso-Sousa L, Georjutti RP, Shimizu JF, Silva S, Caixeta DC, Guevara-Vega M, Cunha TM, Carneiro MG, Goulart LR, Jardim ACG, Sabino-Silva R.
17-04-2023
Diagnostics (Basel).
https://pubmed.ncbi.nlm.nih.gov/37189545/

Zika virus (ZIKV) diagnosis is currently performed through an invasive, painful, and costly procedure using molecular biology. Consequently, the search for a non-invasive, more cost-effective, reagent-free, and sustainable method for ZIKV diagnosis is of great relevance. It is critical to prepare a global strategy for the next ZIKV outbreak given its devastating consequences, particularly in pregnant women. Attenuated total reflection-Fourier transform infrared (ATR-FTIR) spectroscopy has been used to discriminate systemic diseases using saliva; however, the salivary diagnostic application in viral diseases is unknown. To test this hypothesis, we intradermally challenged interferon-gamma gene knockout C57/BL6 mice with ZIKV (50 µL,105 FFU, n = 7) or vehicle (50 µL, n = 8). Saliva samples were collected on day three (due to the peak of viremia) and the spleen was also harvested. Changes in the salivary spectral profile were analyzed by Student's t test (p < 0.05), multivariate analysis, and the diagnostic capacity by ROC curve. ZIKV infection was confirmed by real-time PCR of the spleen sample. The infrared spectroscopy coupled with univariate analysis suggested the vibrational mode at 1547 cm^{-1} as a potential candidate

to discriminate ZIKV and control salivary samples. Three PCs explained 93.2% of the cumulative variance in PCA analysis and the spectrochemical analysis with LDA achieved an accuracy of 93.3%, with a specificity of 87.5% and sensitivity of 100%. The LDA-SVM analysis showed 100% discrimination between both classes. Our results suggest that ATR-FTIR applied to saliva might have high accuracy in ZIKV diagnosis with potential as a non-invasive and cost-effective diagnostic tool.

Frequency of pleural effusion in dengue patients by severity, age and imaging modality: a systematic review and meta-analysis.

Kaagaard MD, Matos LO, Evangelista MVP, Wegener A, Holm AE, Vestergaard LS, Do Valle SCN, Silvestre OM, Lacerda MVG, de Souza RM, Barreto Dos Santos F, Biering-Sørensen T, Brainin P.
15-05-2023
BMC Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37189054/

Background: Identification of pleural effusion (PE) in dengue infection is an objective measure of plasma leakage and may predict disease progression. However, no studies have systematically assessed the frequency of PE in patients with dengue, and whether this differs across age and imaging modality. Methods: We searched Pubmed, Embase Web of Science and Lilacs (period 1900-2021) for studies reporting on PE in dengue patients (hospitalized and outpatient). We defined PE as fluid in the thoracic cavity detected by any imaging test. The study was registered in PROSPERO (CRD42021228862). Complicated dengue was defined as hemorrhagic fever, dengue shock syndrome or severe dengue. Results: The search identified 2,157 studies of which 85 studies were eligible for inclusion. The studies (n = 31 children, n = 10 adults, n = 44 mixed age) involved 12,800 patients (30% complicated dengue). The overall frequency of PE was 33% [95%CI: 29 to 37%] and the rate of PE increased significantly with disease severity (P = 0.001) such that in complicated vs. uncomplicated dengue the frequencies were 48% and 17% (P < 0.001). When assessing all studies, PE occurred significantly more often in children compared to adults (43% vs. 13%, P = 0.002) and lung ultrasound more frequently detected PE than conventional chest X-ray (P = 0.023). Conclusions: We found that 1/3 of dengue patients presented with PE and the frequency increased with severity and younger age. Importantly, lung ultrasound demonstrated the highest rate of detection. Our findings suggest that PE is a relatively common finding in dengue and that bedside imaging tools, such as lung ultrasound, potentially may enhance detection.

Repurposing of drugs against methyltransferase as potential Zika virus therapies.

Shukla R, Chandra A, Kumar A, Kandpal P, Avashthi H, Goel VK, Qamar I, Singh N, Kelvin DJ, Singh TR.
15-05-2023
Sci Rep.
https://pubmed.ncbi.nlm.nih.gov/37188743/

Self-rated health among adolescents from vulnerable areas and their sociodemographic, lifestyle and contextual factors: A multilevel analysis.

de Sales ÉNBG, Barbosa Filho VC, Maciel GP, de Castro VHS, de Bastos PO, Vieira NFC.
15-05-2023
Child Care Health Dev.
https://pubmed.ncbi.nlm.nih.gov/37188524/

Purpose: Understanding self-rated health in young people can help orient global health actions, especially in regions of social vulnerability. The present study analysed individual and contextual factors associated with self-rated health in a sample of Brazilian adolescents. Design and methods: Cross-sectional data from 1272 adolescents (aged 11-17; 48.5% of girls) in low human development index (HDI) neighbourhoods were analysed (HDI from 0.170 to 0.491). The outcome variable was self-rated health. Independent variables relating to individual factors (biological sex, age and economic class) and lifestyle (physical activity, alcohol, tobacco consumption and nutritional state) were measured using standardised instruments. The socio-environmental variables were measured using neighbourhood registered data where the adolescents studied. Multilevel regression was used to estimate the regression coefficients and their 95% confidence intervals (CI). Results: Good self-rated health prevalence was of 72.2%. Being male (B: -0.165; CI: -0.250 to -0.081), age (B: -0.040; CI: -0.073 to -0.007), weekly duration of moderate to vigorous physical activity (B: 0.074; CI: 0.048-0.099), body mass index (B: -0.025; CI: -0.036 to -0.015), number of family healthcare teams in the neighbourhood (B: 0.019; CI: 0.006-0.033) and dengue incidence (B: -0.001; CI: -0.002; -0.000) were factors associated with self-rated health among students from vulnerable areas. Conclusions/practical implications: Approximately three in every 10 adolescents in areas of social vulnerability presented poor self-rated health. This fact was associated with biological sex and age (individual factors), physical activity levels and BMI (lifestyle) and the number of family healthcare teams in the neighbourhood (contextual).

Comparison of platelet indices in dengue fever patients based on platelet transfusion: A prospective observational study in a tertiary care center.

Asha J, Baiju NM, Innah SJ, Rafi A, John BM.
Jan-Jun 2023
Asian J Transfus Sci.
https://pubmed.ncbi.nlm.nih.gov/37188027/

Platelet count in impedance-based hematology analyzer: Beware of trap!

Krishnamurthy V, Shivamurthy A, Kumar PV.
Jan-Jun 2023
Asian J Transfus Sci.
https://pubmed.ncbi.nlm.nih.gov/37188023/

A second local dengue fever outbreak: A field experience from Muscat Governorate in Oman, 2022.

Al Balushi L, Al Kalbani M, Al Manji A, Amin M, Al Balushi Z, Al Barwani N, Al Wahaibi A, Al Manji A, Al Kindi H, Petersen E, Al Ghafri T, Al-Abri S.
01-04-2023
IJID Reg.
https://pubmed.ncbi.nlm.nih.gov/37187798/

Background: Dengue fever is an infectious disease of global health concern. This study aimed to describe the epidemiology and field experience of a locally transmitted outbreak of dengue fever in Muscat Governorate, Oman from mid-March to mid-April 2022, and the multi-sectoral approach to control the outbreak. Methods: Data were collected from an electronic e-notification system, active surveillance and contact investigations. Results: Of 250 suspected and probable cases, 169 were confirmed as dengue fever with DENV-2 serotype. Of these, 108 (63.9%) were male and 94 (55.6%) were Omani. The mean age was 39 years (standard deviation 13 years). Fever was the most common symptom and occurred in 100% of cases. Haemorrhagic manifestations occurred in 10% (*n*=17) of cases. Hospitalization was required for 93 cases (55.1%). The field investigation included 3444 houses and other suspected sites. Breeding sites for *Aedes aegypti* were identified in 565 (18.5%) sites visited. Interventions to control the outbreak included environmental and entomological assessment of the affected houses and surrounding areas (400 m radius of each house). Conclusion: Outbreaks are expected to continue, with the possibility of severe cases due to antibody-dependent enhancement. More data are required to understand the genetics, geographical spread and behaviour of *A. aegypti* in Oman.

Prevention of a dengue outbreak via the large-scale deployment of Sterile Insect Technology in a Brazilian city: a prospective study.

de Castro Poncio L, Apolinário Dos Anjos F, de Oliveira DA, de Oliveira da Rosa A, Piraccini Silva B, Rebechi D, Pedrosa JM, da Costa Franciscato DA, de Souza C, Paldi N.
01-05-2023
Lancet Reg Health Am.
https://pubmed.ncbi.nlm.nih.gov/37187486/

Background: Dengue is a global problem that seems to be worsening, as hyper-urbanization associated with climate change has led to a significant increase in the abundance and geographical spread of its principal vector, the *Aedes aegypti* mosquito. Currently available solutions have not been able to stop the spread of dengue which shows the urgent need to implement alternative technologies as practical solutions. In a previous pilot trial, we demonstrated the efficacy and safety of the method 'Natural Vector Control' (NVC) in suppressing the *Ae. aegypti* vector population and in blocking the occurrence of an outbreak of dengue in the treated areas. Here, we expand the use of the NVC program in a large-scale 20 months intervention period in an entire city in southern Brazil. Methods: Sterile male mosquitoes were produced from locally sourced *Ae. aegypti* mosquitoes by using a treatment that includes double-stranded RNA and thiotepa. Weekly massive releases of sterile male mosquitoes were performed in predefined areas of Ortigueira city from November 2020 to July 2022. Mosquito monitoring was performed by using ovitraps during the entire intervention period. Dengue incidence data was obtained from the Brazilian National Disease Surveillance System. Findings: During the two epidemiological seasons, the intervention in Ortigueira resulted in up to 98.7% suppression of live progeny of field *Ae. aegypti* mosquitoes recorded over time. More importantly, when comparing the 2020 and 2022 dengue outbreaks that occurred in the region, the post-intervention dengue incidence in Ortigueira was 97% lower compared to the control cities. Interpretation: The NVC method was confirmed to be a safe and efficient way to suppress *Ae. aegypti* field populations and prevent the occurrence of a dengue outbreak. Importantly, it has been shown to be applicable in large-scale, real-world conditions. Funding: This study was funded by Klabin S/A and Forrest Innovations Ltd.

Isolation and Genetic Evolution of Dengue Virus from the 2019 Outbreak in Xishuangbanna, Yunnan Province, China.

Meng JX, Hu QM, Zhang LM, Li N, He YW, Yang ZX, Sun Y, Wang JL.
15-05-2023
Vector Borne Zoonotic Dis.
https://pubmed.ncbi.nlm.nih.gov/37184906/

Genomic Characterization of Mosquito Isolates of Chikungunya Virus (Outbreak Strains 2022) Using Next-Generation Sequencing.

Nath A, Kumar S, Gurav YK, Gangopadhayya A, Ghuge O, Sreelakshmi PR, Jadhav A, Rajan LS, Yadav K, Shinde K, Shil P, Sudeep A, Lole KS.
15-05-2023
Vector Borne Zoonotic Dis.
https://pubmed.ncbi.nlm.nih.gov/37184895/

Elucidating cellular interactome of chikungunya virus identifies host dependency factors.

Yin P, Jian X, Liu Y, Liu Y, Lv L, Cui H, Zhang L.
12-05-2023
Virol Sin.
https://pubmed.ncbi.nlm.nih.gov/37182691/

Chikungunya virus (CHIKV) is a re-emerging mosquito-transmitted RNA virus causing joint and muscle pain. To better understand how CHIKV rewires the host cell and usurps host cell functions, we generated a systematic CHIKV-human protein-protein interaction map and revealed several novel connections that will inform further mechanistic studies. One of these novel interactions, between the viral protein E1 and STIP1 homology and U-box containing protein 1 (STUB1), was found to mediate

ubiquitination of E1 and degrade E1 through the proteasome. Capsid associated with G3BP1, G3BP2 and AAA+ ATPase valosin-containing protein (VCP). Furthermore, VCP inhibitors blocked CHIKV infection, suggesting VCP could serve as a therapeutic target. Further work is required to fully understand the functional consequences of these interactions. Given that CHIKV proteins are conserved across alphaviruses, many virus-host protein-protein interactions identified in this study might also exist in other alphaviruses. Construction of interactome of CHIKV provides the basis for further studying the function of alphavirus biology.

Dengue fever: the impact of increasing temperatures and heatwaves.

Frentiu FD.
12-05-2023
EBioMedicine.
https://pubmed.ncbi.nlm.nih.gov/37182266/

Pyrethroid genetic resistance in the dengue vector (Aedes aegypti) in Posadas, Argentina.

Fay JV, Espinola SL, Boaglio MV, Blariza MJ, Lopez K, Zelaya F, Kulkarni MA, Argüelles CF, Ferreras JA, Miretti MM.
27-04-2023
Front Public Health.
https://pubmed.ncbi.nlm.nih.gov/37181710/

Pyrethroids are extensively used to control adult populations of the arboviral vector *Aedes aegypti*, raising concerns regarding the increasing frequency and distribution of insecticide resistance mutations (kdr: knock-down resistance) in the voltage-gated sodium channel gene (*Nav*). The widespread use of pyrethroids imposes a threat to the success of mosquito control and the environment. In this study, we investigated the presence of two kdr mutations (V1016I and F1534C) in the *Nav* gene and their distribution across four neighborhoods in Posadas, Argentina, with different *Ae. aegypti* abundance and contrasting socioeconomic status (SES). Alleles at each locus were interrogated using TaqMan SNP genotyping assays in DNA extracted from adult females collected in a longitudinal study. We report the presence of both pyrethroid resistance alleles (kdr 1016I = 29.08%; kdr 1534C = 70.70%) among adult females. The frequency of combined kdr genotypes reveals that approximately 70% of local adult females have enhanced resistance to pyrethroids. Both, the proportion of resistant adult females (with at least one kdr allele in each locus) and *Ae. aegypti* abundance showed an uneven distribution between neighborhoods with different SES ($p < 0.001$). In high-SES neighborhoods, we found more mosquitoes and a higher frequency of pyrethroid resistance, possibly as a consequence of different public health interventions, social habits, and insecticide use. This is the first report of kdr mutations in *Ae. Aegypti* in the northeast region of Argentina. Our results focus on the need for within-population (city) distribution analyses of kdr mutations and highlight the relevance of incorporating insecticide resistance monitoring within the Integrated Vector Management initiative.

Drug repurposing approach against chikungunya virus: an in vitro and in silico study.

Kasabe B, Ahire G, Patil P, Punekar M, Davuluri KS, Kakade M, Alagarasu K, Parashar D, Cherian S.
27-04-2023
Front Cell Infect Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37180434/

Editorial: Reviews in neglected tropical infectious diseases.

Ghorai S.
26-04-2023
Front Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37180224/

Unstable fipronil resistance associated with fitness costs in fipronil-selected Aedes aegypti L.

Khan MA, Riaz M, Kamran M, Shad SA.
11-05-2023
Exp Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37178970/

Mosquitoes are very serious household and medically important pests transmitting many diseases of humans and animals. Among mosquitoes, Aedes aegypti L., is an active transmitter of dengue and lumpy skin disease virus, horrible and terrifying diseases, causing human and animal death throughout the world. Fipronil is a new chemistry insecticide used to control agriculture and medically important insect pests. It affects the GABA receptors in the nervous system and consequently causes the death of the pests. A laboratory experiment was conducted to investigate the onset of fipronil resistance and associated fitness costs in Ae. Aegypti. Moreover, the stability of fipronil resistance was evaluated after five generations of rearing without selection pressure. The population of Ae. Aegypti was exposed continuously for 12 generations to fipronil under controlled conditions. The fipronil selected population (Fipro-Sel Pop) had a 317 and 115.7-fold level of resistance compared to a susceptible and field population, respectively. Relative fitness for Fipro-Sel Pop was 0.57, with a significant disadvantage in larval duration, developmental time, percent hatchability, intrinsic rate of natural increase (r_m), net reproductive rate (R_o), number of larvae in the next generation, and mean relative growth rate (MRGR) when compared to the Unselected population (Un-Sel Pop). However, the relative fitness value of $Cross_1$ (Un-Sel Pop ♂ × Fipro-Sel Pop ♀) and $Cross_2$ (Fipro-Sel Pop ♂ × Un-Sel Pop ♀) was 1.69 and 1.12, respectively. It is evident from the results that fipronil resistance comes with a fitness disadvantage, and it is unstable in the Fipro-Sel Pop of Ae. Aegypti. Therefore, the alternation of fipronil with other chemicals or suspension of fipronil usage for some time could improve its efficacy by delaying resistance development in Ae. Aegypti.

Further research should be performed to investigate the field applicability of our findings.

Genetic differences of dengue virus 2 in patients with distinct clinical outcome.

de Carvalho Marques B, Sacchetto L, Banho CA, Estofolete CF, Dourado FS, da Silva Cândido D, Dutra KR, da Silva Salles FC, de Jesus JG, Sabino EC, Faria NR, Nogueira ML.
13-05-2023
Braz J Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37178262/

The genetic diversity of the dengue virus is characterized by four circulating serotypes, several genotypes, and an increasing number of existing lineages that may have differences in the potential to cause epidemics and disease severity. Accurate identification of the genetic variability of the virus is essential to identify lineages responsible for an epidemic and understanding the processes of virus spread and virulence. Here, we characterize, using portable nanopore genomic sequencing, different lineages of dengue virus 2 (DENV-2) detected in 22 serum samples from patients with and without dengue warning signs attended at Hospital de Base of São José do Rio Preto (SJRP) in 2019, during a DENV-2 outbreak. Demographic, epidemiological, and clinical data were also analyzed. The phylogenetic reconstruction and the clinical data showed that two lineages belonging to the American/Asian genotype of DENV-2-BR3 and BR4 (BR4L1 and BR4L2)-were co-circulating in SJRP. Although preliminary, these results indicate no specific association between clinical form and phylogenetic clustering at the virus consensus sequence level. Studies with larger sample sizes and which explore single nucleotide variants are needed. Therefore, we showed that portable nanopore genome sequencing could generate quick and reliable sequences for genomic surveillance to monitor viral diversity and its association with disease severity as an epidemic unfolds.

An in-depth analysis of maternal mortality in a quaternary university hospital in Southern Thailand: A 16-year experience.

Peeyananjarassri K, Ratipann N, Suwanrath C, Pinjaroen S, Chainarong N, Choobun T.
13-05-2023
Int J Gynaecol Obstet.
https://pubmed.ncbi.nlm.nih.gov/37177786/

Dengue Virus Capsid Protein Facilitates Genome Compaction and Packaging.

Boon PLS, Martins AS, Lim XN, Enguita FJ, Santos NC, Bond PJ, Wan Y, Martins IC, Huber RG.
02-05-2023
Int J Mol Sci.
https://pubmed.ncbi.nlm.nih.gov/37175867/

Molecular Research on Vector-Borne Diseases of Medical Interest: From Bench to Application 2.0.

Sereno D.
26-04-2023
Int J Mol Sci.
https://pubmed.ncbi.nlm.nih.gov/37175612/

Functional Nanomaterials Enhancing Electrochemical Biosensors as Smart Tools for Detecting Infectious Viral Diseases.

Curulli A.
27-04-2023
Molecules.
https://pubmed.ncbi.nlm.nih.gov/37175186/

Electrochemical biosensors are known as analytical tools, guaranteeing rapid and on-site results in medical diagnostics, food safety, environmental protection, and life sciences research. Current research focuses on developing sensors for specific targets and addresses challenges to be solved before their commercialization. These challenges typically include the lowering of the limit of detection, the widening of the linear concentration range, the analysis of real samples in a real environment and the comparison with a standard validation method. Nowadays, functional nanomaterials are designed and applied in electrochemical biosensing to support all these challenges. This review will address the integration of functional nanomaterials in the development of electrochemical biosensors for the rapid diagnosis of viral infections, such as COVID-19, middle east respiratory syndrome (MERS), influenza, hepatitis, human immunodeficiency virus (HIV), and dengue, among others. The role and relevance of the nanomaterial, the type of biosensor, and the electrochemical technique adopted will be discussed. Finally, the critical issues in applying laboratory research to the analysis of real samples, future perspectives, and commercialization aspects of electrochemical biosensors for virus detection will be analyzed.

Global transmission suitability maps for dengue virus transmitted by Aedes aegypti from 1981 to 2019.

Nakase T, Giovanetti M, Obolski U, Lourenço J.
12-05-2023
Sci Data.
https://pubmed.ncbi.nlm.nih.gov/37173303/

Dengue vaccine acceptability before and after the availability of COVID-19 vaccines in Puerto Rico.

Rodriguez DM, Major CG, Sánchez-González L, Jones E, Delorey MJ, Alonso C, Rivera-Amill V, Paz-Bailey G, Adams LE.
05-05-2023
Vaccine.
https://pubmed.ncbi.nlm.nih.gov/37173267/

Dengue is a growing public health threat, causing approximately 400 million infections annually. In June

2021, the Advisory Committee on Immunization Practices recommended the first dengue vaccine (CYD-TDV) for children aged 9-16 years with a previous dengue infection, living in endemic areas, such as Puerto Rico (PR). As the COVID-19 pandemic affected vaccine intention worldwide, we assessed dengue vaccine intention before (pre-COVID) and after (post-COVID) COVID-19 vaccine availability among participants enrolled in the Communities Organized to Prevent Arboviruses (COPA) cohort to prepare for dengue vaccine implementation in PR. We used logistic regression models to evaluate changes in dengue vaccine intention by interview timing and participant characteristics. Among 2,513 participants pre-COVID, 2,512 answered the dengue vaccine intention question for themselves, and 1,564 answered relative to their children. Post-COVID, dengue vaccine intention in adults increased for themselves from 73.4% to 84.5% (adjusted odds ratio (aOR) = 2.27, 95%CI: 1.90-2.71) and relative to their children from 75.6% to 85.5% (aOR = 2.21, 95%CI: 1.75-2.78). Among all participants, groups with higher dengue vaccine intention included those who reported previous year influenza vaccine uptake and those who reported being frequently bitten by mosquitos, compared to those who did not. Adult males were also more likely to intend to vaccinate themselves than females. Respondents who were employed or in school were less likely to intend to vaccinate compared to those who were not working. The primary reasons for vaccine hesitancy were concerns with side effects and not believing in vaccines, which should be considered during educational strategies prior to dengue vaccine implementation. In general, dengue vaccine intention is high in PR and has increased after COVID-19 vaccine availability, potentially due to increased awareness of vaccine importance during the COVID-19 pandemic.

An unusual presentation of pituitary apoplexy precipitated by dengue haemorrhagic fever in a dialysis patient.

Yee XJ, Guo W.
26-04-2023
Singapore Med J.
https://pubmed.ncbi.nlm.nih.gov/37171422/

Climate change and vector-borne diseases: a multi-omics approach of temperature-induced changes in the mosquito.

Bellone R, Lechat P, Mousson L, Gilbart V, Piorkowski G, Bohers C, Merits A, Kornobis E, Reveillaud J, Paupy C, Vazeille M, Martinet JP, Madec Y, De Lamballerie X, Dauga C, Failloux AB.
25-04-2023
J Travel Med.
https://pubmed.ncbi.nlm.nih.gov/37171132/

Mapping the distribution and trends of co-circulating dengue virus serotypes in Odisha, India: A retrospective facility-based analysis.

Labala S, Sinha A, Panda S, Turuk J, Pati S, Sahoo PK.
Nov-Dec 2023
Natl Med J India.
https://pubmed.ncbi.nlm.nih.gov/37167511/

Background Dengue, caused by mosquito bite, is an emerging disease of international concern. Evidence regarding the prevalent dengue serotypes is scarce, but essential for its management during the outbreaks. Hence, we mapped the distribution and trends of currently prevalent dengue virus (DENV) serotypes in Odisha. Methods We conducted a facility-based retrospective study from referral samples sent for the diagnosis/confirmation of dengue in 2018. The samples were serologically tested for enzyme-linked immunosorbent assay (ELISA) IgM antibody and NS1. Only NS1-positive samples were chosen for sero-typing. A pool of 8-10 NS1-positive samples were analysed for district-wise serotypes. Ribonucleic acid extraction and nested polymerase chain reaction (PCR) was done from NS1-positive samples. The PCR products were then subjected to gel electrophoresis. Results A total of 2892 samples were screened for dengue virus across various districts of Odisha where 763 samples were found to be NS1-positive. Thirteen of 18 districts covering all topographies of Odisha predominantly had DENV2 serotype. Only few districts such as Balangir, Kalahandi and Rayagada had mixed serotypes. Conclusion Although DENV2 is predominantly prevalent, mixed serotypes too exist in Odisha. Evidence based on variations of dengue serotypes across topographies, seasons, gender and age groups may support public health efforts in preventing the disease.

Integrated vector management program in the framework of the COVID-19 pandemic in Medellin, Colombia.

Rojo-Ospina RA, Quimbayo-Forero M, Calle-Tobón A, Bedoya-Patiño SC, Gómez M, Ramírez A, Sánchez J, Silva-Alzate JF, Montes-Zuluaga CJ, Cadavid JM, Henao-Correa EA.
30-05-2023
Biomedica.
https://pubmed.ncbi.nlm.nih.gov/37167464/

Introduction: The COVID-19 pandemic pressured health care systems to remain alert and active in their vector-borne disease control and prevention programs, leading to changes in vector control strategies in urban areas affected by dengue, Zika and chikungunya. Objective: To describe the adaptations made to the vector control and surveillance program in Medellín during the COVID-19 health emergency. Materials and methods: Once the health emergency started, biosecurity protocols were developed. Entomological surveillance was strengthened from the institutional environment instead of homes. Data was collected in Medellín from 2018 to 2021 during the vector control and surveillance program activities, which included epidemiological and entomovirological surveillance, entomological index survey, ovitrap monitoring, community mobilization, search and elimination of mosquito breading sites, and chemical control. These actions were adapted and/or increased to promote self-care among communities in total and partial confinement, and to develop prevention and control measures. Results: Mosquito monitoring was increased by

40% using ovitraps, entomological virological surveillance showed an increase in 2020 of 34,4% compared to 2019 and virtual media was used to keep and improve contact with the community. Conclusion: The COVID-19 pandemic had a significant impact on arbovirus prevention and control programs. The city of Medellín quickly adapted its entomo-virological surveillance activities, control measures, and the contact with the community during the pandemic, which allow the Integrated Vector Management program to remain active in the city.

[The experience in treatment of dengue fever using antiviral drug riamilovir in the Republic of Guinea (case report)].

Maltsev OV, Kasyanenko KV, Zhdanov KV, Malyshev NA, Kolomoets EV, Konomou VK.
24-02-2023
Ter Arkh.
https://pubmed.ncbi.nlm.nih.gov/37167119/

Dengue fever is classified as one of the most common viral diseases with a transmission mechanism implemented through arthropod vectors. The expansion of of the Aedes aegypti mosquito is leading to a significant increase in the number of cases of dengue fever in more than 100 countries, highlighting the importance of developing and implementing specific prevention and treatment measures. Etiotropic drugs with proven efficacy against the pathogen are not registered, and the use of the vaccine is approved only among seropositive individuals. In this regard, pathogenetic treatment remains the main therapeutic strategy, however, work on the synthesis of antiviral drugs is being actively carried out. Due to the unique functions of non-structural proteins NS3 and NS5 in the viral replication cycle, they have become the main targets for studying the antiviral activity of a number of chemotherapy drugs. Of these proteins, due to the most conserved structure, the NS5 protein is a promising target for inhibition, however, success in obtaining a clinical effect using a number of available antiviral drugs has not been reached. This study describes the positive experience of using the nucleoside analogue riamilovir in the treatment of a patient with dengue fever in the Republic of Guinea.

The tick saliva peptide HIDfsin2 promotes the tick-borne virus SFTSV replication in vitro by enhancing p38 signal pathway.

Wang L, Sun F, Hu J, Zuo W, Zheng Y, Wu Y, Kwok HF, Cao Z.
Juin-2023
Arch Toxicol.
https://pubmed.ncbi.nlm.nih.gov/37148319/

A conserved Y-shaped RNA structure in the 3'UTR of chikungunya virus genome as a host-specialized element that modulates viral replication and evolution.

Bardossy ES, Volpe S, Alvarez DE, Filomatori CV.
01-05-2023
PLoS Pathog.
https://pubmed.ncbi.nlm.nih.gov/37126493/

Innate immune pathway modulator screen identifies STING pathway activation as a strategy to inhibit multiple families of arbo and respiratory viruses.

Garcia G Jr, Irudayam JI, Jeyachandran AV, Dubey S, Chang C, Castillo Cario S, Price N, Arumugam S, Marquez AL, Shah A, Fanaei A, Chakravarty N, Joshi S, Sinha S, French SW, Parcells MS, Ramaiah A, Arumugaswami V.
16-05-2023
Cell Rep Med.
https://pubmed.ncbi.nlm.nih.gov/37119814/

RNA viruses continue to remain a threat for potential pandemics due to their rapid evolution. Potentiating host antiviral pathways to prevent or limit viral infections is a promising strategy. Thus, by testing a library of innate immune agonists targeting pathogen recognition receptors, we observe that Toll-like receptor 3 (TLR3), stimulator of interferon genes (STING), TLR8, and Dectin-1 ligands inhibit arboviruses, Chikungunya virus (CHIKV), West Nile virus, and Zika virus to varying degrees. STING agonists (cAIMP, diABZI, and 2',3'-cGAMP) and Dectin-1 agonist scleroglucan demonstrate the most potent, broad-spectrum antiviral function. Furthermore, STING agonists inhibit severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and enterovirus-D68 (EV-D68) infection in cardiomyocytes. Transcriptome analysis reveals that cAIMP treatment rescue cells from CHIKV-induced dysregulation of cell repair, immune, and metabolic pathways. In addition, cAIMP provides protection against CHIKV in a chronic CHIKV-arthritis mouse model. Our study describes innate immune signaling circuits crucial for RNA virus replication and identifies broad-spectrum antivirals effective against multiple families of pandemic potential RNA viruses.

iPSC-derived three-dimensional brain organoid models and neurotropic viral infections.

Swingler M, Donadoni M, Bellizzi A, Cakir S, Sariyer IK.
Avr-2023
J Neurovirol.
https://pubmed.ncbi.nlm.nih.gov/37097597/

Screening for Zika virus in US armed services blood program donors: An opportunity to compare emerging infectious disease risk between the general US population and military donors.

Fedyk CG, Shahin GM, Hill R, Cap AP; DoD Zika IND Investigators.
Mai-2023
Transfusion.
https://pubmed.ncbi.nlm.nih.gov/37097201/

Background: The U.S. Department of Defense (DoD) collects blood from volunteer DoD donors in U.S. Food and Drug Administration (FDA)-regulated centers, and from emergency donor panels in overseas operations. Emerging

infectious diseases could reduce DoD access to blood products. In August 2016, FDA determined that Zika virus was transfusion-transmitted and advised that donated blood should be screened for Zika utilizing one of two investigational new drug (IND) applications. The Armed Services Blood Program (ASBP) tested blood using its own protocol concurrently with the IND study sponsored by Roche Molecular Systems, Inc., titled "A Prospective Study to Evaluate the Specificity of the cobas Zika test for use on the cobas 6800/8800 System for Screening of Blood Donations for the Presence of Zika virus RNA." **Study design and methods:** This prospective clinical trial (September 2016-August 2017) evaluated the specificity of the cobas Zika 6800/8800 System. Consenting volunteers were screened for Zika by participating reference labs. Participants with positive screens were offered a follow-up study using alternative PCR and serology assays. **Results:** 92,618 DoD donors enrolled; four tested positive on screening (0.0043%; CI 0.001176896%, 0.01105894%). Three enrolled in follow-up testing and none were positive. These results were comparable to all U.S. donors: 3,858,114 enrolled (excluding Puerto Rico) with 459 positive screens (0.0119%; CI 0.01083582%, 0.01303962%). **Conclusion:** The study demonstrated the effectiveness of the cobas Zika test. DoD donors, who are included in emergency donor panels during military operations, were at no higher risk for Zika than the overall U.S. donor population.

Discovery of ZFD-10 of a pyridazino[4,5-b]indol-4(5H)-one derivative as an anti-ZIKV agent and a ZIKV NS5 RdRp inhibitor.

Zhou GF, Qian W, Li F, Yang RH, Wang N, Zheng CB, Li CY, Gu XR, Yang LM, Liu J, Xiong SD, Zhou GC, Zheng YT.
Juin-2023
Antiviral Res.
https://pubmed.ncbi.nlm.nih.gov/37088168/

Effects of high temperatures and heatwaves on dengue fever: a systematic review and meta-analysis.

Damtew YT, Tong M, Varghese BM, Anikeeva O, Hansen A, Dear K, Zhang Y, Morgan G, Driscoll T, Capon T, Bi P.
Mai-2023
EBioMedicine.
https://pubmed.ncbi.nlm.nih.gov/37088034/

Background: Studies have shown that dengue virus transmission increases in association with ambient temperature. We performed a systematic review and meta-analysis to assess the effect of both high temperatures and heatwave events on dengue transmission in different climate zones globally. **Methods:** A systematic literature search was conducted in PubMed, Scopus, Embase, and Web of Science from January 1990 to September 20, 2022. We included peer reviewed original observational studies using ecological time series, case crossover, or case series study designs reporting the association of high temperatures and heatwave with dengue and comparing risks over different exposures or time periods. Studies classified as case reports, clinical trials, non-human studies, conference abstracts, editorials, reviews, books, posters, commentaries; and studies that examined only seasonal effects were excluded. Effect estimates were extracted from published literature. A random effects meta-analysis was performed to pool the relative risks (RRs) of dengue infection per 1 °C increase in temperature, and further subgroup analyses were also conducted. The quality and strength of evidence were evaluated following the Navigation Guide systematic review methodology framework. The review protocol has been registered in the International Prospective Register of Systematic Reviews (PROSPERO). **Findings:** The study selection process yielded 6367 studies. A total of 106 studies covering more than four million dengue cases fulfilled the inclusion criteria; of these, 54 studies were eligible for meta-analysis. The overall pooled estimate showed a 13% increase in risk of dengue infection (RR = 1.13; 95% confidence interval (CI): 1.11-1.16, I^2 = 98.0%) for each 1 °C increase in high temperatures. Subgroup analyses by climate zones suggested greater effects of temperature in tropical monsoon climate zone (RR = 1.29, 95% CI: 1.11-1.51) and humid subtropical climate zone (RR = 1.20, 95% CI: 1.15-1.25). Heatwave events showed association with an increased risk of dengue infection (RR = 1.08; 95% CI: 0.95-1.23, I^2 = 88.9%), despite a wide confidence interval. The overall strength of evidence was found to be "sufficient" for high temperatures but "limited" for heatwaves. Our results showed that high temperatures increased the risk of dengue infection, albeit with varying risks across climate zones and different levels of national income. **Interpretation:** High temperatures increased the relative risk of dengue infection. Future studies on the association between temperature and dengue infection should consider local and regional climate, socio-demographic and environmental characteristics to explore vulnerability at local and regional levels for tailored prevention. **Funding:** Australian Research Council Discovery Program.

Tissue-specific expansion of Zika virus isogenic variants drive disease pathogenesis.

Chan KWK, Bifani AM, Watanabe S, Choy MM, Ooi EE, Vasudevan SG.
Mai-2023
EBioMedicine.
https://pubmed.ncbi.nlm.nih.gov/37068347/

Background: The Asian lineage Zika virus (ZIKV) emerged as a public health emergency in 2016 causing severe neurological pathologies with no apparent historical correlate to the mild, disease-causing innocuous member of the mosquito-borne flavivirus genus that was discovered in Africa in 1947. Replication error rate of RNA viruses combined with viral protein/RNA structural plasticity can lead to evolution of virus-induced pathogenicity that is critical to identify and validate. **Methods:** Infection studies in cells and A129 interferon alpha/beta receptor deficient mice with ZIKV French Polynesian H/PF/2013 clinical isolate, plaque-purified isogenic clone derivatives as well as infectious cDNA clone derived wild-type and site-specific mutant viruses, were employed together with Next-Generation Sequencing

(NGS) to pin-point the contributions of specific viral variants in neurovirulence recapitulated in our ZIKV mouse model. **Findings:** NGS analysis of the low-passage inoculum virus as well as mouse serum, brain and testis derived virus, revealed specific enrichment in the mouse brain that were not found in the other tissues. Specifically, non-structural (NS) protein 2A variant at position 117 along with changes in NS1 and NS4B were uniquely associated with the mouse brain isolate. Mutational analysis of these variants in cDNA infectious clones identified the NS2A A117V as the lethal pathogenic determinant with potential epistatic contribution of NS1 and NS4B variants in ZIKV brain penetrance. **Interpretation:** Our findings confirm that viral subpopulations drive ZIKV neuropathogenicity and identify specific sequence variants that expand in the mouse brain that associates with this phenotype which can serve as predictors of severe epidemics. **Funding:** Duke-NUS Khoo Post-doctoral Fellowship Award 2020 (KWKC) and National Medical Research Council of Singapore grants MOH-000524 (OFIRG) (SW) and MOH-OFIRG20nov-0002 (SGV).

A cellular screening platform, stably expressing DENV2 NS5, defines a novel anti-DENV mechanism of action of Apigenin based on STAT2 activation.

Acchioni C, Acchioni M, Mancini F, Amendola A, Marsili G, Tirelli V, Gwee CP, Chan KW, Sandini S, Bisbocci M, Mysara M, ElHefnawi M, Sanchez M, Venturi G, Barreca ML, Manfroni G, Bresciani A, Vasudevan SG, Sgarbanti M.

Juin-2023

Virology.

https://pubmed.ncbi.nlm.nih.gov/37060797/

Type I interferon (IFN-I) evasion by Dengue virus (DENV) is key in DENV pathogenesis. The non-structural protein 5 (NS5) antagonizes IFN-I response through the degradation of the signal transducer and activator of transcription 2 (STAT2). We developed a K562 cell-based platform, for high throughput screening of compounds potentially counteracting the NS5-mediated antagonism of IFN-I signaling. Upon a screening with a library of 1220 approved drugs, 3 compounds previously linked to DENV inhibition (Apigenin, Chrysin, and Luteolin) were identified. Luteolin and Apigenin determined a significant inhibition of DENV2 replication in Huh7 cells and the restoration of STAT2 phosphorylation in both cell systems. Apigenin and Luteolin were able to stimulate STAT2 even in the absence of infection. Despite the "promiscuous" and "pan-assay-interfering" nature of Luteolin, Apigenin promotes STAT2 Tyr 689 phosphorylation and activation, highlighting the importance of screening for compounds able to interact with host factors, to counteract viral proteins capable of dampening innate immune responses.

Zika virus infection of retinal cells and the developing mouse eye induces host responses that contrasts to the brain and dengue virus infection.

Cowell E, Kris LP, Bracho-Granado G, Jaber H, Smith JR, Carr JM.

Avr-2023

J Neurovirol.

https://pubmed.ncbi.nlm.nih.gov/37022660/

Integrative bulk and single-cell transcriptome profiling analysis reveals IFI27 as a novel interferon-stimulated gene in dengue.

Jiang C, He C, Kan J, Guan H, Zhou T, Yang Y.

Avr-2023

J Med Virol.

https://pubmed.ncbi.nlm.nih.gov/36971141/

The dengue virus (DENV) is a public health threat to humans. Increased vascular permeability, coagulopathy, and hemorrhagic diathesis are the pathophysiological hallmarks of severe dengue. However, although the interferon (IFN)-mediated innate immune response forms the backbone of cell-autonomous defense against pathogens, the exact IFN-stimulated genes (ISGs) involved in DENV infection remain to be determined. The present study collected transcriptomic data sets of peripheral blood mononuclear cells from DENV patients and healthy volunteers from public data repositories. Also, lentivirus and plasmid were used to overexpress and knockdown IFI27. Initially, differentially expressed genes were filtered, and gene set enrichment analysis (GSEA) was performed to assess related pathways. Subsequently, the least absolute shrinkage and selection operator regression and support vector machine-recursive feature elimination algorithms were used to screen crucial genes. The receiver operating characteristic curve analysis was then employed to test diagnostic efficacy. Next, CIBERSORT was used to analyze immune infiltration in 22 immune cell subsets. Additionally, to dissect high-resolution molecular phenotypes directly from individual cells and the cellular interactions between immune cell subpopulations, single-cell RNA sequencing (scRNA-seq) was performed. We found that the IFN-stimulated gene IFN-α-inducible protein 27 (IFI27) was highly expressed in dengue patients by leveraging bioinformatics analysis and machine learning algorithms. This finding was further validated in two independent published databases. In addition, IFI27 overexpression positively regulated DENV-2 infection, whereas IFI27 knockdown has the opposite effect. Consistently, scRNA-seq analysis supported this conclusion, along with further dissection of increased IFI27 expression mainly concentrated in monocytes and plasmacytoid dendritic cells. We also demonstrated that IFI27 inhibited dengue infection. Moreover, IFI27 was positively correlated with monocytes, M1 macrophages, activated dendritic cells, plasma cells, and resting mast cells and negatively correlated with CD8 T cells, γδ T cells, and naïve B cells. GSEA revealed that IFI27 was primarily enriched in the innate immune response, regulation of the viral life cycle, and JAK-STAT signaling pathway. Notably, the interactions between LGALS9 and its receptor CD47 were markedly increased in dengue patients compared to healthy controls, based on cell-cell communication analysis. Our findings reveal, for the first time, that IFI27 is a key ISG in DENV infection. Given that the innate immune system plays a significant role in antagonizing DENV invasion, while ISGs are the ultimate antiviral effectors,

IFI27 may serve as a potential diagnostic marker and therapeutic target in dengue, although further validation is warranted.

Epidemic models and their use: Comment on "Mathematical models for dengue fever epidemiology: A 10-year systematic review" by Aguiar et al.

Codeço CT, Coelho FC.
Juil-2023
Phys Life Rev.
https://pubmed.ncbi.nlm.nih.gov/36933441/

Repellent Screening of Selected Plant Essential Oils Against Dengue Fever Mosquitoes Using Behavior Bioassays.

Deng W, Li M, Liu S, Logan JG, Mo J.
Juin-2023
Neotrop Entomol.
https://pubmed.ncbi.nlm.nih.gov/36928838/

Differential Expression Patterns of Indoleamine 2,3-Dioxygenase 1 and Other Tryptophan and Arginine Catabolic Pathway Genes in Dengue Correlate with Clinical Severity-Pilot Study Results.

Jose S, Jerome R, Krishnan A, Jagan OA, Li D, Menon V.
Mai-2023
Viral Immunol.
https://pubmed.ncbi.nlm.nih.gov/36921291/

The kynurenine pathway of tryptophan catabolism can modulate inflammatory responses inducing immunotolerance or immunosuppressive effects. Indoleamine 2,3-dioxygenase (IDO) is the rate-limiting enzyme in this pathway. Early aberrant inflammation is implicated in severe dengue, and herein we investigate and characterize the expression of IDO pathway genes in severe dengue patients. We use a SyBR green-based qPCR to evaluate the leukocyte expression levels of *IDO1*, *IDO2*, *AhR*, *TGF-β*, *ARG1*, *IFNγ*, and *IFNα* in a dengue patient cohort (n = 51). Twenty-two cases were identified as severe dengue using the WHO case classification (2009) criteria. Principal component analysis (PCA) was employed to examine the relationships of gene expression profiles with disease severity and laboratory markers of clinical severity. We find that two principal components describe most of the variance (65.3%) in the expression patterns of the cohort. Reduced expression of *IDO1*, *TGF-β*, and *AhR*, represented by low Component 2 scores, was significantly associated with disease severity, thrombocytopenia, and leukopenia. Higher expression levels of *IDO2*, *IFNγ*, and *IFNα* positively correlated with Component 1 scores, and were significantly associated with elevated ALT (p = 0.018) and AST (p = 0.017) enzymes. Our results suggest that profiling the baseline expression patterns of the IDO pathway genes may aid in the identification of dengue patients most at risk of severe disease.

Insecticide Resistance Status of Aedes albopictus (Diptera: Culicidae) Populations from Cuba.

Piedra LA, Rodriguez MM, Lopez I, Ruiz A, Martinez LC, Garcia I, Rey J, Bisset JA.
12-05-2023
J Med Entomol.
https://pubmed.ncbi.nlm.nih.gov/36791252/

Aedes albopictus (Skuse, 1894) is one of the major vectors for arboviruses such as dengue, Zika, and chikungunya. Originally from Southeast Asia, this species has spread to Africa, Europe, and the Americas, including Cuba. This spread has been favored by its great adaptability to variable temperatures and to the resistance of its eggs to desiccation. Chemical control of mosquitoes is an essential alternative to stop arbovirus transmission, but insecticide resistance status of the Cuban Ae. albopictus populations is unknown. For this study, Ae. albopictus larvae and adults were collected from two municipalities in Havana, Cuba in 2019. Adult bioassays for deltamethrin, cypermethrin, lambda-cyhalothrin, chlorpyrifos, propoxur, and bendiocarb susceptibility were conducted according to CDC methodology. Larval bioassays for temephos susceptibility were performed following WHO protocols. Resistance profiles for α and β-esterases, glutathione S-transferase (GST), and multifunction oxidases (MFO) pathways were constructed and analyzed. Resistance to temephos and deltamethrin was detected in Mulgoba and Plaza field populations, but resistance to lambda-cyhalothrin was only found in the Plaza colony. Plaza colony exhibited a higher expression level to all four metabolic enzymes and α-esterases and GTS were over-expressed in Mulgoba. The development of insecticide resistance in Cuban Ae. albopictus populations makes it imperative that we develop integrated control strategies to minimize the development of resistance and provide effective vector control that prevents the onset of arbovirus epidemics.

Broad-Spectrum Anti-Flavivirus Activity and Chemistry of Compounds Containing Sulfur and Oxygen Chalcogens.

Sole Burali M, Cecchetti V, Manfroni G.
2023
Curr Med Chem.
https://pubmed.ncbi.nlm.nih.gov/35702779/

Dracunculose

Araceae root and citrus fibers tend to decrease Escherichia coli adhesion and myeloperoxidase levels in weaned piglets.

Tanghe S, De Vos M, Degroote J, Lannoo K, Vande Ginste J, D'Inca R, Michiels J.
28-04-2023
Front Vet Sci.
https://pubmed.ncbi.nlm.nih.gov/37187931/

Integrative Analysis of Metabolomic and Transcriptomic Data Reveals the Mechanism of Color Formation in Corms of Pinellia ternata.

Xu R, Luo M, Xu J, Wang M, Huang B, Miao Y, Liu D.
28-04-2023
Int J Mol Sci.
https://pubmed.ncbi.nlm.nih.gov/37175702/

Pinellia ternata (Thunb.) Breit. (*P. ternata*) is a very important plant that is commonly used in traditional Chinese medicine. Its corms can be used as medicine and function to alleviate cough, headache, and phlegm. The epidermis of *P. ternata* corms is often light yellow to yellow in color; however, within the range of *P. ternata* found in JingZhou City in Hubei Province, China, there is a form of *P. ternata* in which the epidermis of the corm is red. We found that the total flavonoid content of red *P. ternata* corms is significantly higher than that of yellow *P. ternata* corms. The objective of this study was to understand the molecular mechanisms behind the difference in epidermal color between the two forms of *P. ternata*. The results showed that a high content of anthocyanidin was responsible for the red epidermal color in *P. ternata*, and 15 metabolites, including cyanidin-3-O-rutinoside-5-O-glucoside, cyanidin-3-O-glucoside, and cyanidin-3-O-rutinoside, were screened as potential color markers in *P. ternata* through metabolomic analysis. Based on an analysis of the transcriptome, seven genes, including *PtCHS1*, *PtCHS2*, *PtCHI1*, *PtDFR5*, *PtANS*, *PtUPD-GT2*, and *PtUPD-GT3*, were found to have important effects on the biosynthesis of anthocyanins in the *P. ternata* corm epidermis. Furthermore, two transcription factors (TFs), *bHLH1* and *bHLH2*, may have regulatory functions in the biosynthesis of anthocyanins in red *P. ternata* corms. Using an integrative analysis of the metabolomic and transcriptomic data, we identified five genes, *PtCHI*, *PtDFR2*, *PtUPD-GT1*, *PtUPD-GT2*, and *PtUPD-GT3*, that may play important roles in the presence of the red epidermis color in *P. ternata* corms.

Preparation of Neohesperidin-Taro Starch Complex as a Novel Approach to Modulate the Physicochemical Properties, Structure and In Vitro Digestibility.

Zuo Y, He Z, Yang W, Sun C, Ye X, Tian J, Kong X.
05-05-2023
Molecules.
https://pubmed.ncbi.nlm.nih.gov/37175311/

Neohesperidin (NH), a natural flavonoid, exerts multiple actions, such as antioxidant, antiviral, antiallergic, vasoprotective, anticarcinogenic and anti-inflammatory effects, as well as inhibition of tumor progression. In this study, the NH-taro starch complex is prepared, and the effects of NH complexation on the physicochemical properties, structure and in vitro digestibility of taro starch (TS) are investigated. Results showed that NH complexation significantly affected starch gelatinization temperatures and reduced its enthalpy value (ΔH). The addition of NH increased the viscosity and thickening of taro starch, facilitating shearing and thinning. NH binds to TS via hydrogen bonds and promotes the formation of certain crystalline regions in taro starch. SEM images revealed that the surface of NH-TS complexes became looser with the increasing addition of NH. The digestibility results demonstrated that the increase in NH (from 0.1% to 1.1%, weight based on starch) could raise RS (resistant starch) from 21.66% to 27.75% and reduce RDS (rapidly digestible starch) from 33.51% to 26.76% in taro starch. Our work provided a theoretical reference for the NH-taro starch complex's modification of physicochemical properties and in vitro digestibility with potential in food and non-food applications.

Ambiguous changes in photosynthetic parameters of Lemna minor L. after short-term exposure to naproxen and paracetamol: Can the risk be ignored?

Zezulka Š, Kummerová M, Šmeringai J, Babula P, Tříska J.
Juin-2023
Aquat Toxicol.
https://pubmed.ncbi.nlm.nih.gov/37060818/

Non-steroidal anti-inflammatory drugs (NSAID) are recently monitored in the aquatic environment. Naproxen (NPX), paracetamol (PCT) and their transformation products can influence the biochemical and physiological processes at the sub-cellular and cellular levels taking part in the growth and development of plants. This study aimed to compare the effects of NPX and PCT, drugs with different physico-chemical properties, on the growth and photosynthetic processes in Lemna minor during a short-term (7 days) exposure. Although duckweed took up more than five times higher amount of PCT as compared to NPX (275.88 μg/g dry weight to 43.22 μg/g when treated with 10 mg/L), only NPX limited the number of new plants by 9% and 26% under 1 and 10 mg/L, respectively, and increased their dry weight (by 18% under 10 mg/L) and leaf area per plant. A considerable (by 30%) drop in the content of photosynthetic pigments under 10 mg/L treatment by both drugs did not significantly affect the efficiency of the primary processes of photosynthesis. Values of induced chlorophyll fluorescence parameters (F_0, F_V/F_M, Φ_{II}, and NPQ) showed just a mild stimulation by PCT and a negative effect by NPX (by up to 10%), especially on the function of photosystem II and electron transport in both intact duckweed plants and isolated chloroplasts. Lowered efficiency of Hill reaction activity (by more than 10% under 0.1 - 10 mg/L treatments) in isolated chloroplasts suspension proved the only inhibition effect of PCT to primary photosynthetic processes. In intact plants, higher treatments (0.5 - 10 mg/L) by both NPX and PCT induced an increase in RuBisCO content. The results prove that the potential effect of various drugs on plants is hard to generalise.

Pinellia genus: A systematic review of active ingredients, pharmacological effects and action mechanism, toxicological evaluation, and multi-omics application.

Chen C, Sun Y, Wang Z, Huang Z, Zou Y, Yang F, Hu J, Cheng H, Shen C, Wang S.
20-06-2023
Gene.
https://pubmed.ncbi.nlm.nih.gov/37044184/

Echinococcose

Differences in clinical aspects of human cystic echinococcosis caused by Echinococcus granulosus sensu stricto and the G6 genotype in Neuquén, Argentina.

Debiaggi MF, Alvarez Rojas CA, Lazzarini LE, Calfunao D, Titanti P, Calanni L, Iacono M, Soriano SV, Deplazes P, Pierangeli NB.
20-03-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/37203451/

Most human cystic echinococcosis (CE) cases worldwide are attributed to *Echinococcus granulosus sensu stricto* (*s.s*), followed by the G6 and G7 genotypes. While *E. granulosus s.s.* has a cosmopolitan distribution, the G6 genotype is restricted to areas where camels and goats are present. Goats are the primary livestock in the Neuquén province in Argentina where the G6 genotype has been reported to be responsible for a significant percentage of CE human cysts genotyped. In the present study, we genotyped 124 *Echinococcus* cysts infecting 90 CE-confirmed patients. *Echinococcus granulosus s.s.* was identified in 51 patients (56.7%) with 81 cysts and the G6 genotype in 39 patients (43.3%) harbouring 43 cysts. Most CE cases ≤18 years were male suggesting pastoral work could be a risk factor for the infection. *Echinococcus granulosus s.s.* was significantly found more frequently in the liver (32/51 patients) and the G6 genotype in the lungs and extrahepatic localizations (27/39). The patients infected with *E. granulosus s.s.*, presented up to 6 cysts while patients infected with G6 presented a maximum of 2. The diameter of lung cysts attributed to *E. granulosus s.s.* was significantly larger compared to lung cysts from G6. Following the WHO ultrasound classification of liver cysts, we observed inactive cysts in 55.6% of G6 cysts and only 15.3% of *E. granulosus s.s* cysts. In conclusion, we provide evidence of differences in clinical aspects of CE caused by *E. granulosus s.s.* and the G6 genotype of *E. granulosus s.l.* complex infecting humans.

Experimental cystic echinococcosis as a proof of concept for the development of peptide-based vaccines following a novel rational workflow.

Miles S, Dematteis S, Mourglia-Ettlin G.
16-05-2023
Biologicals.
https://pubmed.ncbi.nlm.nih.gov/37201271/

Vaccines are among the most important advances in medicine throughout the human history. However, conventional vaccines exhibit several drawbacks in terms of design and production costs. Peptide-based vaccines are attractive alternatives, since they can be designed mainly in silico, can be produced cheaply and safely, and are able to induce immune responses exclusively towards protective epitopes. Yet, a proper peptide design is needed, not only to generate peptide-specific immune responses, but also for them to recognize the native protein in the occurrence of a natural infection. Herein, we propose a rational workflow for developing peptide-based vaccines including novel steps that assure the cross-recognition of native proteins. In this regard, we increased the probability of generating efficient antibodies through the selection of linear B-cell epitopes free of post-translational modifications followed by analyzing the 3D-structure similarity between the peptide in-solution vs. within its parental native protein. As a proof of concept, this workflow was applied to a set of seven previously suggested potential protective antigens against the infection by Echinococcus granulosus sensu lato. Finally, two peptides were obtained showing the capacity to induce specific antibodies able to exert anti-parasite activities in different in vitro settings, as well as to provide significant protection in the murine model of secondary echinococcosis.

PULMONARY CYSTIC ECHINOCOCCOSIS IN A CHILD PRESENTING IN THE UNITED KINGDOM WITH FEVER AND CHEST PAIN: A BRIEF REPORT AND DISCUSSION ON MANAGEMENT.

Lees EA, Ives A, Fowler D, Lakhoo K, Grant D, Kelly D, Paulus S, Segal S, Gilchrist JJ, Kew A, Chiodini P, Kadambari S.
17-05-2023
Pediatr Infect Dis J.
https://pubmed.ncbi.nlm.nih.gov/37200507/

Liver cystic echinococcosis: a parasitic review.

Govindasamy A, Bhattarai PR, John J.
11-05-2023
Ther Adv Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37197609/

An Interesting Case of Hydatid Cyst of Liver Concomitant with Hydatid Cyst of Broad Ligament: A Case Report.

Chitrambalam T, George N, Paladugu R, Selvamuthukumaran S, Gilani A.
Jan-Mar 2023
Iran J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37197078/

Hydatid cyst is an anthropozoonotic disease caused by *Echinococcus* for which man is an accidental intermediate host. The hydatid disease commonly involves the liver and lungs. Involvement of extrahepaticopulmonary sites is extremely rare and only a few isolated cases have been reported. In 2022, a 49 year old female from the southern part of Indian subcontinent presented to us with recurrent hydatid cyst of liver co-existing with hydatid cyst of the left broad ligament, twenty years following the initial procedure. She underwent exploratorylaparotomy and

cystectomy and was then managed by ERCP and stenting following which she is asymptomatic till date. Though there are no hard and fast rules, the management of such cases mandate proper exploration to avoid any recurrence. Tailored surgical approaches maybe required according to the patient condition for effective, safe and recurrence free treatment of hepatic hydatidosis.

A 20 Years Retrospective Descriptive Study of Human Cystic Echinococcosis and the Role of Albendazole Concurrent with Surgical Treatment: 2001-2021.

Mahmoodi S, Ebrahimian M, Mirhashemi SH, Soori M, Rashnoo F, Oshidari B, Shadidi Asil R, Zamani A, Hajinasrollah E.
Jan-Mar 2023
Iran J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37197074/

Background: Hydatid cyst, caused by the larvae of *Echinococcus granulosus*, is one of the most severe cestode infections occurring in Iran. The liver is the most commonly involved organ. The present study was carried out to review the demographic of 20 years surgically treated hydatic cysts. Methods: Ninety-eight patients were enrolled in the study. Demographic features, time of surgery, cyst size, and albendazole usage have been reviewed from the medical records of patients in Loghman Hakim Hospital, Tehran, Iran, from 2001 to 2021. Statistical analysis was performed to find any correlation between the uses of concurrent albendazole with surgical procedure.

Results: Of 98 patients with hydatid cyst, 57 (58.2%) were female. The mean age of patients was 39.4 ±18.7 yrs, and the mean surgery time was 217.5 ± 81.4 minutes. Regarding the infection site, the liver (60.2%) and lungs (22.4%) were the most affected organs, respectively. 56.1% of patients had one cyst, and 42.9 % had two or more cysts. 20.4% of them had taken albendazole before surgery, but 86.7 % took it after the operation. No recurrent cysts were seen among 91.8% of them, but 8.2% mentioned suffering from a recurrent cyst. 85.7% of those recurrent cases did not receive albendazole before surgery, and 75% of recurrent cases after surgery did not take albendazole (P<0.05). Conclusion: Administration of albendazole before and after the operation was significantly related to reduced recurrence, bleeding, morbidity, and even the time of surgery.

First isolation of Echinococcus granulosus sensu lato Genotype 7 in the Archipelago of Cape Verde.

Baptista LSG, Laurimäe T, Muchaamba G, Cathomas L, de Barros Olende ALP, da Mata Dos Santos I, de Pina ÂCL, Deplazes P.
17-05-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/37194602/

Analysis of antioxidant enzymes and oxidative stress markers in the liver of naturally infected Indian water buffalo (Bubalus bubalis) with cystic echinococcosis.

Aslam H, Bi S, Irshadullah M.
Juin-2023
J Parasit Dis.
https://pubmed.ncbi.nlm.nih.gov/37193507/

Pediatric Hydatid Cyst of the Neck Mimicking a Cystic Tumor: A Report of a Rare Case.

Ait M'barek Y, Hamadi H, Benantar L, Belokda T, Hamidi E, Aniba K.
09-04-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37182023/

Hydatidosis is a parasitic infection caused by the cestode *Echinococcus granulosus* usually occurring in the liver and lungs. Hydatid cyst of the neck is a rarely described location and more so on the back of the neck. We present a case of a six-year-old girl with a slowly evolving mass on the back of her neck. Medical investigations revealed a secondary asymptomatic liver cyst. MRI of the neck mass was consistent with a cystic lesion. Surgical removal of the neck cyst was performed. Pathological examination results confirmed the diagnosis of hydatid cyst. The patient was put on medical treatment with a complete recovery and uneventful follow-up.

Genetic characterization of human echinococcosis in Southern Punjab, Pakistan.

Basharat N, Khan J, Ullah I, Shah AA, Ali I.
27-04-2023
Front Cell Infect Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37180451/

Introduction: Echinococcosis is a neglected tropical zoonotic infection that affects both the human and livestock populations. In Pakistan, the infection is long-standing, but data on its molecular epidemiology and genotypic characterization in the southern Punjab region are limited. The aim of the current study was the molecular characterization of human echinococcosis in southern Punjab, Pakistan. Methods: Echinococcal cysts were obtained from a total of 28 surgically treated patients. Patients' demographic characteristics were also recorded. The cyst samples were subjected to further processing to isolate DNA in order to probe the *Nad1* and *Cyt-b* genes, followed by DNA sequencing and phylogenetic analysis for genotypic identification. Results: The majority of the echinococcal cysts were from male patients (60.7%). The liver was the most commonly infected organ (60.71%), followed by the lungs (25%), spleen (7.14%), and the mesentery (7.14%). Molecular and genotypic identification through sequencing and phylogenetic tree analysis showed that most of the cysts (24/28, 85.7%) were caused by the species *Echinococcus granulosus sensu stricto* (*E. granulosus s.s.*) (G1 and G3), followed by *Echinococcus multilocularis* (*E. multilocularis*) and *Echinococcus canadensis* (*E. canadensis*) (G6/G7) (3/28, 10.8%, and 1/28, 3.5%, respectively). Conclusion:

The current study concluded that the majority of human infections were caused by *E. granulosus s.s.*, followed by the *E. multilocularis* and *E. canadensis* species (G6/G7). Genotypic characterization among both human and livestock populations is needed to explore the genetic diversity of echinococcosis.

Intestinal infection with Echinococcus multilocularis in a dog.

Jenkins EJ, Kolapo TU, Jarque MP, Ruschkowski C, Frey C.
12-05-2023
J Am Vet Med Assoc.
https://pubmed.ncbi.nlm.nih.gov/37179049/

Association between radical versus conservative surgery and short-term outcomes of hepatic cystic echinococcosis in Nyingchi, China: a retrospective cohort study.

Huang L, Zheng B, Aduo, Ouzhulamu, Li X, Yao J.
12-05-2023
BMC Surg.
https://pubmed.ncbi.nlm.nih.gov/37173700/

Background: Radical or conservative surgical treatment for hepatic Cystic Echinococcosis (hepatic CE) is controversial. We aimed to measure the association between radical surgery (RS) versus conservative surgery (CS) and short-term outcomes in our cohort. Methods: Medical records of hepatic CE patients' demographic, clinical, radiological, operative and postoperative details who underwent surgical treatment between January 3, 2017 and January 3, 2018 at the Department of General Surgery, Nyingchi People's Hospital, Nyingchi, China, were retrieved and analyzed. The primary outcome was overall morbidity. The secondary outcomes included: (i) bile leakage; (ii) complications of lung, pleura, heart, liver, pancreas and biliary tract; (iii) incision infection and residual cavity abscess formation; (iv) anaphylactic reaction and shock; (v) tear of surrounding tissues; (vi) hospital and post-operative length of stay (LOS); (vii) length of surgery; (viii) blood loss during surgery. Multivariable logistic/linear regression models with various adjustment strategies for confounders were performed to evaluate the association. Results: A total of 128 hepatic CE patients were included with 82 (64.1%) and 46 (35.9%) receiving CS and RS, respectively. After fully adjusted, RS was associated with 60% lower risk of overall complication (aOR 0.4; 95%CI, 0.2-0.9) and 0.6-h shorter surgical time (aβ 0.4; 95%CI,-0.0-0.8) comparing to CS. However, RS was associated with more blood loss during surgery (aβ 179.3; 95%CI, 54.2-304.5). Conclusion: To conclude, RS was associated with a 60% reduction in developing overall complication in the short term, but may result in more blood loss during surgery than CS.

Upregulation of LAG3 modulates the immune imbalance of CD4+ T-cell subsets and exacerbates disease progression in patients with alveolar echinococcosis and a mouse model.

Li D, Ainiwaer A, Zheng X, Wang M, Shi Y, Rousu Z, Hou X, Kang X, Maimaiti M, Wang H, Li J, Zhang C.
12-05-2023
PLoS Pathog.
https://pubmed.ncbi.nlm.nih.gov/37172058/

Infection with the cestode Echinococcus multilocularis (E. multilocularis) causes alveolar echinococcosis (AE), a tumor-like disease predominantly affecting the liver but able to spread to any organ. T cells develop functional defects during chronic E. multilocularis infection, mostly due to upregulation of inhibitory receptors such as T-cell immunoreceptor with immunoglobulin and immunoreceptor tyrosine-based inhibitory motif domains (TIGIT) and programmed death-1 (PD-1). However, the role of lymphocyte activation gene-3 (LAG3), an inhibitory receptor, in AE infection remains to be determined. Here, we discovered that high expression of LAG3 was mainly found in CD4+ T cells and induced regulatory T cells (iTregs) in close liver tissue (CLT) from AE patients. In a mouse model of E. multilocularis infection, LAG3 expression was predominantly found in T helper 2 (Th2) and Treg subsets, which secreted significantly more IL-4 and IL-10, resulting in host immune tolerance and disease progression at a late stage. Furthermore, LAG3 deficiency was found to drive the development of effector memory CD4+ T cells and enhance the type 1 CD4+ T-cell immune response, thus inhibiting metacestode growth in vivo. In addition, CD4+ T cells from LAG3-deficient mice produced more IFN-γ and less IL-4 when stimulated by E. multilocularis protoscoleces (EmP) antigen in vitro. Finally, adoptive transfer experiments showed that LAG3-knockout (KO) CD4+ T cells were more likely to develop into Th1 cells and less likely to develop into Tregs in recipient mice. Our work reveals that high expression of LAG3 accelerates AE disease progression by modulating the immune imbalance of CD4+ T-cell subsets. These findings may provide a novel immunotherapeutic strategy against E. multilocularis infection.

Single-Cell RNA Sequencing Reveals Unique Alterations in the Immune Panorama and Treg Subpopulations in Mice during the Late Stages of Echinococcus granulosus Infection.

Wu J, Xiao J, Bai M, Shi C, Xin Y, Zhao W, Gao X, Yin M, Zhao J.
16-05-2023
Infect Immun.
https://pubmed.ncbi.nlm.nih.gov/37039643/

Rapid and accurate screening of cystic echinococcosis in sheep based on serum Fourier-transform infrared spectroscopy combined with machine learning algorithms.

Dawuti W, Dou J, Zheng X, Lü X, Zhao H, Yang L, Lin R, Lü G.
Mai-2023
J Biophotonics.
https://pubmed.ncbi.nlm.nih.gov/36707914/

Cystic echinococcosis (CE) in sheep is a serious zoonotic parasitic disease caused by Echinococcus granulosus sensu stricto (s.s.). Presently, the screening technology for CE in sheep is time-consuming and inaccurate, and novel screening technology is urgently needed. In this work, we combined machine-learning algorithms with Fourier transform infrared (FT-IR) spectroscopy of serum to establish a quick and accurate screening approach for CE in sheep. Serum samples from 77 E. granulosus s.s.-infected sheep to 121 healthy control sheep were measured by FT-IR spectrometer. To optimize the classification accuracy of the serum FI-TR method for the E. granulosus s.s.-infected sheep and healthy control sheep, principal component analysis (PCA), linear discriminant analysis, and support vector machine (SVM) algorithms were used to analyze the data. Among all the bands, 1500-1700 cm^{-1} band has the best classification effect; its diagnostic sensitivity, specificity, and accuracy of PCA-SVM were 100%, 95.74%, and 96.66%, respectively. The study showed that serum FT-IR spectroscopy combined with machine learning algorithms has great potential for rapid and accurate screening methods for the CE in sheep.

Bio-Membrane SELEX as a New Approach for Selecting ss-DNA Aptamers that Bind to the Hydatid Cyst Laminated Layer.

Dehkordi AB, Khanahmad H, Azizi Y, Mirian M, Pestehchian N, Darani HY.
2023
Curr Mol Med.
https://pubmed.ncbi.nlm.nih.gov/35578872/

Filariose lymphatique

The impact of ivermectin, diethylcarbamazine citrate, and albendazole mass drug administration on the prevalence of scabies and soil-transmitted helminths in school-aged children in three municipalities in Timor-Leste: a before-after assessment.

Le B, Monteiro MAA, Amaral S, Wand H, Matthews A, Hii SF, Clarke NE, Arkell P, Yan J, Engelman D, Fancourt N, Fernandes JL, Steer A, Kaldor J, Traub R, Francis JR, Nery SV.
Juin-2023
Lancet Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37202027/

Background: Integrated programmes that use combination mass drug administration (MDA) might improve control of multiple neglected tropical diseases simultaneously. We investigated the impact of Timor-Leste's national ivermectin, diethylcarbamazine citrate, and albendazole MDA, for lymphatic filariasis elimination and soil-transmitted helminth (STH) control, on scabies, impetigo, and STH infections. Methods: We did a before-after study in six primary schools across three municipalities in Timor-Leste (urban [Dili], semi-urban [Ermera], and rural [Manufahi]) before (April 23 to May 11, 2019) and 18 months after (Nov 9 to Nov 27, 2020) MDA delivery between May 17 and June 1, 2019. Study participants included schoolchildren, as well as infants, children, and adolescents who were incidentally present at school on study days. All schoolchildren whose parents provided consent were eligible to participate in the study. Infants, children, and adolescents younger than 19 years who were not enrolled in the school but were incidentally present at schools on study days were also eligible to participate if their parents consented. Ivermectin, diethylcarbamazine citrate, and albendazole MDA was implemented nationally, with single doses of oral ivermectin (200 µg/kg), diethylcarbamazine citrate (6 mg/kg), and albendazole (400 mg) administered by the Ministry of Health. Scabies and impetigo were assessed by clinical skin examinations, and STHs using quantitative PCR. The primary (cluster-level) analysis adjusted for clustering while the secondary (individual-level) analysis adjusted for sex, age, and clustering. The primary outcomes of the study were prevalence ratios for scabies, impetigo, and STHs (Trichuris trichiura, Ascaris lumbricoides, Necator americanus, and moderate-to-heavy A lumbricoides infections) between baseline and 18 months from the cluster-level analysis. Findings: At baseline, 1043 (87·7%) of 1190 children registered for the study underwent clinical assessment for scabies and impetigo. The mean age of those who completed skin examinations was 9·4 years (SD 2·4) and 514 (53·8%) of 956 were female (87 participants with missing sex data were excluded from this percentage calculation). Stool samples were received for 541 (45·5%) of 1190 children. The mean age of those for whom stool samples were received was 9·8 years (SD 2·2) and 300 (55·5%) were female. At baseline, 348 (33·4%) of 1043 participants had scabies, and 18 months after MDA, 133 (11·1%) of 1196 participants had scabies (prevalence ratio 0·38, 95% CI 0·18-0·88; p=0·020) in the cluster-level analysis. At baseline, 130 (12·5%) of 1043 participants had impetigo, compared with 27 (2·3%) of 1196 participants at follow-up (prevalence ratio 0·14, 95% CI 0·07-0·27; p<0·0001). There was a significant reduction in T trichiura prevalence from baseline (26 [4·8%] of 541 participants) to 18-month follow-up (four [0·6%] of 623 participants; prevalence ratio 0·16, 95% CI 0·04-0·66; p<0·0001). In the individual-level analysis, moderate-to-heavy A lumbricoides infections reduced from 54 (10·0%; 95% CI 0·7-19·6) of 541 participants to 28 (4·5%, 1·2-8·4) of 623 participants (relative reduction 53·6%; 95% CI 9·1-98·1; p=0·018). Interpretation: Ivermectin, diethylcarbamazine citrate, and albendazole MDA was associated with substantial reductions in prevalence of scabies, impetigo, and T trichiura, and of moderate-to-heavy intensity A lumbricoides infections. Combination MDA could be used to support integrated control programmes to target multiple NTDs. Funding: National Health and Medical Research Council of Australia and the Department of Foreign Affairs and Trade Indo-Pacific Centre for Health Security. Translation: For the Tetum translation of the abstract see Supplementary Materials section.

Lymphatic filariasis endgame strategies: Using GEOFIL to model mass drug administration and targeted surveillance

and treatment strategies in American Samoa.

Shaw C, McLure A, Graves PM, Lau CL, Glass K.
18-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37200375/

American Samoa underwent seven rounds of mass drug administration (MDA) for lymphatic filariasis (LF) from 2000-2006, but subsequent surveys found evidence of ongoing transmission. American Samoa has since undergone further rounds of MDA in 2018, 2019, and 2021; however, recent surveys indicate that transmission is still ongoing. GEOFIL, a spatially-explicit agent-based LF model, was used to compare the effectiveness of territory-wide triple-drug MDA (3D-MDA) with targeted surveillance and treatment strategies. Both approaches relied on treatment with ivermectin, diethylcarbamazine, and albendazole. We simulated three levels of whole population coverage for 3D-MDA: 65%, 73%, and 85%, while the targeted strategies relied on surveillance in schools, workplaces, and households, followed by targeted treatment. In the household-based strategies, we simulated 1-5 teams travelling village-to-village and offering antigen (Ag) testing to randomly selected households in each village. If an Ag-positive person was identified, treatment was offered to members of all households within 100m-1km of the positive case. All simulated interventions were finished by 2027 and their effectiveness was judged by their 'control probability'-the proportion of simulations in which microfilariae prevalence decreased between 2030 and 2035. Without future intervention, we predict Ag prevalence will rebound. With 3D-MDA, a 90% control probability required an estimated ≥ 4 further rounds with 65% coverage, ≥ 3 rounds with 73% coverage, or ≥ 2 rounds with 85% coverage. While household-based strategies were substantially more testing-intensive than 3D-MDA, they could offer comparable control probabilities with substantially fewer treatments; e.g. three teams aiming to test 50% of households and offering treatment to a 500m radius had approximately the same control probability as three rounds of 73% 3D-MDA, but used < 40% the number of treatments. School- and workplace-based interventions proved ineffective. Regardless of strategy, reducing Ag prevalence below the 1% target threshold recommended by the World Health Organization was a poor indicator of the interruption of LF transmission, highlighting the need to review blanket elimination targets.

Socio-Environmental Risk Indicator: A Possible Tool for Surveillance of Lymphatic Filariasis.

Xavier A, Bonfim C, Medeiros Z.
Jan-Mar 2023
Iran J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37197076/

Kaposi Sarcoma: A Rare Presentation of Elephantiasis Nostras Verrucosa.

Doodnauth AV, Zhou J, Sivarajah S, Xavier HE, McFarlane SI.
09-04-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37182020/

Editorial: Reviews in neglected tropical infectious diseases.

Ghorai S.
26-04-2023
Front Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37180224/

Importance of consultations using mobile teams in the screening and treatment of neglected tropical skin diseases in Benin.

Gnimavo RS, Fajloun F, Al-Bayssari C, Sodjinou E, Habib A, Ganlonon L, Claco E, Agoundoté I, Houngbo OA, Anagonou EG, Biaou CAO, Ayélo AG, Houezo JG, Boccarossa A, Moussa EH, Gomez B, Gine A, Sopoh GE, Marion E, Johnson RC, Kempf M.
12-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37172044/

Context: Since 2013, the World Health Organization has recommended integrated control strategies for neglected tropical diseases (NTDs) with skin manifestations. We evaluated the implementation of an integrated approach to the early detection and rapid treatment of skin NTDs based on mobile clinics in the Ouémé and Plateau areas of Benin. Methods: This descriptive cross-sectional study was performed in Ouémé and Plateau in Benin from 2018 to 2020. Consultations using mobile teams were performed at various sites selected by reasoned choice based on the epidemiological data of the National Program for the Control of Leprosy and Buruli Ulcer. All individuals presenting with a dermatological lesion who voluntarily approached the multidisciplinary management team on the day of consultation were included. The information collected was kept strictly anonymous and was entered into an Excel 2013 spreadsheet and analyzed with Stata 11 software. Results: In total, 5,267 patients with various skin conditions consulted the medical team. The median age of these patients was 14 years (IQR: 7-34 years). We saw 646 (12.3%) patients presenting NTDs with skin manifestations, principally scabies, in 88.4% (571/646), followed by 37 cases of Buruli ulcer (5.8%), 22 cases of leprosy (3.4%), 15 cases of lymphatic filariasis (2.3%) and one case of mycetoma (0.2%). We detected no cases of yaws. Conclusion: This sustainable approach could help to decrease the burden of skin NTDs in resource-limited countries.

Immunophenotypic and Functional Characterization of Eosinophil and Migratory Dendritic Cell Subsets during Filarial Manifestation of Tropical Pulmonary Eosinophilia.

Ganga L, Sharma P, Tiwari S, Satoeya N, Jha R, Srivastava M.
12-05-2023

ACS Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37040430/

Forging Ahead the Repositioning of Multitargeted Drug Ivermectin.

Atmakuri S, Nene S, Khatri D, Singh SB, Sinha VR, Srivastava S.
2023
Curr Drug Deliv.
https://pubmed.ncbi.nlm.nih.gov/35578879/

With the advent of ivermectin, tremendous improvement in public health has been observed, especially in the treatment of onchocerciasis and lymphatic filariasis that created chaos mostly in rural, sub-Saharan Africa and Latin American countries. The discovery of ivermectin became a boon to millions of people that had suffered in the pandemic and still holds its pharmacological potential. Ivermectin continued to surprise scientists because of its notable role in the treatment of various other tropical diseases (Chagas, leishmaniasis, worm infections, etc.) and is viewed as the safest drug with the least toxic effects. The current review highlights its role in unexplored avenues towards forging ahead of the repositioning of this multitargeted drug in cancer, viral (the evaluation of the efficacy of ivermectin against SARS-Cov-2 is under investigation) and bacterial infection and malaria. This article also provides a glimpse of regulatory considerations of drug repurposing and current formulation strategies. Due to its broad-spectrum activity, multitargeted nature and promising efforts are put towards the repurposing of this drug throughout the field of medicine. This single drug originated from a microbe, changed the face of global health by proving its unmatched success and progressive efforts continue in maintaining its bequestnin the management of global health by decreasing the burden of various diseases worldwide.

Is the neglected tropical disease mass drug administration campaign approach an effective strategy to deliver universal health coverage? A case study of the Liberia neglected tropical disease programme.

Tate A, Kollie K, Senyonjo L, Sturrock H, Downs P, Bush S, Bedell A, Molyneux D.
16-05-2023
Int Health.
https://pubmed.ncbi.nlm.nih.gov/37191201/

Background: Access to affordable, quality healthcare is the key element of universal health coverage (UHC). This study examines the effectiveness of the neglected tropical disease (NTD) mass drug administration (MDA) campaign approach as a means to deliver UHC, using the example of the Liberia national programme. Methods: We first mapped the location of 3195 communities from the 2019 national MDA treatment data reporting record of Liberia. The association between coverage for onchocerciasis and lymphatic filariasis treatment achieved in these communities was then explored using a binomial geo-additive model. This model employed three key determinants for community 'remoteness': population density and the modelled travel time of communities to their supporting health facility and to their nearest major settlement. Results: Maps produced highlight a small number of clusters of low treatment coverage in Liberia. Statistical analysis suggests there is a complex relationship between treatment coverage and geographic location. Conclusions: We accept the MDA campaign approach is a valid mechanism to reach geographically marginal communities and, as such, has the potential to deliver UHC. We recognise there are specific limitations requiring further study.

Crysal structure of dihydrofolate reductase from the filarial nematode W. bancrofti in complex with NADPH and folate.

Lange K, Frey KM, Eck T, Janson CA, Gubler U, Goodey NM.
27-04-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37104530/

Gale

The impact of ivermectin, diethylcarbamazine citrate, and albendazole mass drug administration on the prevalence of scabies and soil-transmitted helminths in school-aged children in three municipalities in Timor-Leste: a before-after assessment.

Le B, Monteiro MAA, Amaral S, Wand H, Matthews A, Hii SF, Clarke NE, Arkell P, Yan J, Engelman D, Fancourt N, Fernandes JL, Steer A, Kaldor J, Traub R, Francis JR, Nery SV.
Juin-2023
Lancet Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37202027/

Background: Integrated programmes that use combination mass drug administration (MDA) might improve control of multiple neglected tropical diseases simultaneously. We investigated the impact of Timor-Leste's national ivermectin, diethylcarbamazine citrate, and albendazole MDA, for lymphatic filariasis elimination and soil-transmitted helminth (STH) control, on scabies, impetigo, and STH infections. Methods: We did a before-after study in six primary schools across three municipalities in Timor-Leste (urban [Dili], semi-urban [Ermera], and rural [Manufahi]) before (April 23 to May 11, 2019) and 18 months after (Nov 9 to Nov 27, 2020) MDA delivery between May 17 and June 1, 2019. Study participants included schoolchildren, as well as infants, children, and adolescents who were incidentally present at school on study days. All schoolchildren whose parents provided consent were eligible to participate in the study. Infants, children, and adolescents younger than 19 years who were not enrolled in the school but were incidentally present at schools on study days were also eligible to participate if their parents consented. Ivermectin, diethylcarbamazine citrate, and albendazole MDA was implemented nationally, with single doses of oral ivermectin (200 µg/kg),

diethylcarbamazine citrate (6 mg/kg), and albendazole (400 mg) administered by the Ministry of Health. Scabies and impetigo were assessed by clinical skin examinations, and STHs using quantitative PCR. The primary (cluster-level) analysis adjusted for clustering while the secondary (individual-level) analysis adjusted for sex, age, and clustering. The primary outcomes of the study were prevalence ratios for scabies, impetigo, and STHs (Trichuris trichiura, Ascaris lumbricoides, Necator americanus, and moderate-to-heavy A lumbricoides infections) between baseline and 18 months from the cluster-level analysis. **Findings:** At baseline, 1043 (87·7%) of 1190 children registered for the study underwent clinical assessment for scabies and impetigo. The mean age of those who completed skin examinations was 9·4 years (SD 2·4) and 514 (53·8%) of 956 were female (87 participants with missing sex data were excluded from this percentage calculation). Stool samples were received for 541 (45·5%) of 1190 children. The mean age of those for whom stool samples were received was 9·8 years (SD 2·2) and 300 (55·5%) were female. At baseline, 348 (33·4%) of 1043 participants had scabies, and 18 months after MDA, 133 (11·1%) of 1196 participants had scabies (prevalence ratio 0·38, 95% CI 0·18-0·88; p=0·020) in the cluster-level analysis. At baseline, 130 (12·5%) of 1043 participants had impetigo, compared with 27 (2·3%) of 1196 participants at follow-up (prevalence ratio 0·14, 95% CI 0·07-0·27; p<0·0001). There was a significant reduction in T trichiura prevalence from baseline (26 [4·8%] of 541 participants) to 18-month follow-up (four [0·6%] of 623 participants; prevalence ratio 0·16, 95% CI 0·04-0·66; p<0·0001). In the individual-level analysis, moderate-to-heavy A lumbricoides infections reduced from 54 (10·0%; 95% CI 0·7-19·6) of 541 participants to 28 (4·5%, 1·2-8·4) of 623 participants (relative reduction 53·6%; 95% CI 9·1-98·1; p=0·018). **Interpretation:** Ivermectin, diethylcarbamazine citrate, and albendazole MDA was associated with substantial reductions in prevalence of scabies, impetigo, and T trichiura, and of moderate-to-heavy intensity A lumbricoides infections. Combination MDA could be used to support integrated control programmes to target multiple NTDs. **Funding:** National Health and Medical Research Council of Australia and the Department of Foreign Affairs and Trade Indo-Pacific Centre for Health Security. **Translation:** For the Tetum translation of the abstract see Supplementary Materials section.

Scabies Affects Quality of Life in Correlation with Depression and Anxiety.

Koç Yıldırım S, Demirel Öğüt N, Erbağcı E, Öğüt Ç.
01-04-2023
Dermatol Pract Concept.
https://pubmed.ncbi.nlm.nih.gov/37196304/

Introduction: Scabies is a highly contagious disease affects many people worldwide each year and a major public health problem. A small number of studies have shown that scabies causes impairment in the quality of life in adult patients. **Objectives:** The aims of this study are to assess the impact of scabies on adult patients quality of life (QoL) and evaluate the relationship between depression and anxiety levels and impairment in life quality. **Methods:** This cross-sectional study included adult patients diagnosed with scabies in our dermatology outpatient clinic. The effect of scabies on QoL was evaluated by Dermatology Life Quality Index (DLQI), and the levels of depression and anxiety were evaluated by Beck Depression Scale (BDS) and Beck Anxiety Scale (BAS).

Results: Totally, 85 patients included to the study. QoL of 72.2% of the patients was moderate to extremely large affected. There was a positive correlation between the duration of the disease, the total DLQI score and the severity of the disease impact on QoL (r_s= 0.287, P = 0.01 and r_s=0.280, P = 0.008, respectively). A positive correlation was found between the number of treatments received and the total DLQI (r_s= 0.223, P = 0.042). There was a positive correlation between BDS and BAS, and total DLQI score (r_s=0.448 and P = 0.000; rs=0.456 and P = 0.000, respectively). **Conclusions:** Scabies has a moderate to severe effect on QoL. There was a positive correlation between impairment QoL and anxiety and depression scores.

Crusted Scabies of Hands: Constraints of Teledermatology.

Ertekin SS, Botsalı A, Danacı S, Vural S.
01-04-2023
Dermatol Pract Concept.
https://pubmed.ncbi.nlm.nih.gov/37196271/

Can Ivermectin kill Sarcoptes scabiei during the molting process?

Feng S, Shi M, Yin Z, Di W, Guillot J, Fang F.
17-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37196006/

Importance of consultations using mobile teams in the screening and treatment of neglected tropical skin diseases in Benin.

Gnimavo RS, Fajloun F, Al-Bayssari C, Sodjinou E, Habib A, Ganlonon L, Claco E, Agoundoté I, Houngbo OA, Anagonou EG, Biaou CAO, Ayélo AG, Houezo JG, Boccarossa A, Moussa EH, Gomez B, Gine A, Sopoh GE, Marion E, Johnson RC, Kempf M.
12-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37172044/

Context: Since 2013, the World Health Organization has recommended integrated control strategies for neglected tropical diseases (NTDs) with skin manifestations. We evaluated the implementation of an integrated approach to the early detection and rapid treatment of skin NTDs based on mobile clinics in the Ouémé and Plateau areas of Benin. **Methods:** This descriptive cross-sectional study was performed in Ouémé and Plateau in Benin from 2018 to 2020. Consultations using mobile teams were performed at various sites selected by reasoned choice based on the epidemiological data of the National Program for the Control of Leprosy and Buruli Ulcer. All individuals presenting with a dermatological lesion who voluntarily

approached the multidisciplinary management team on the day of consultation were included. The information collected was kept strictly anonymous and was entered into an Excel 2013 spreadsheet and analyzed with Stata 11 software. **Results:** In total, 5,267 patients with various skin conditions consulted the medical team. The median age of these patients was 14 years (IQR: 7-34 years). We saw 646 (12.3%) patients presenting NTDs with skin manifestations, principally scabies, in 88.4% (571/646), followed by 37 cases of Buruli ulcer (5.8%), 22 cases of leprosy (3.4%), 15 cases of lymphatic filariasis (2.3%) and one case of mycetoma (0.2%). We detected no cases of yaws. **Conclusion:** This sustainable approach could help to decrease the burden of skin NTDs in resource-limited countries.

Helminthiases transmises par le sol (ascaridiose, trichuriase, ankylostomiase)

The impact of ivermectin, diethylcarbamazine citrate, and albendazole mass drug administration on the prevalence of scabies and soil-transmitted helminths in school-aged children in three municipalities in Timor-Leste: a before-after assessment.

Le B, Monteiro MAA, Amaral S, Wand H, Matthews A, Hii SF, Clarke NE, Arkell P, Yan J, Engelman D, Fancourt N, Fernandes JL, Steer A, Kaldor J, Traub R, Francis JR, Nery SV.

Juin-2023

Lancet Glob Health.

https://pubmed.ncbi.nlm.nih.gov/37202027/

Background: Integrated programmes that use combination mass drug administration (MDA) might improve control of multiple neglected tropical diseases simultaneously. We investigated the impact of Timor-Leste's national ivermectin, diethylcarbamazine citrate, and albendazole MDA, for lymphatic filariasis elimination and soil-transmitted helminth (STH) control, on scabies, impetigo, and STH infections. **Methods:** We did a before-after study in six primary schools across three municipalities in Timor-Leste (urban [Dili], semi-urban [Ermera], and rural [Manufahi]) before (April 23 to May 11, 2019) and 18 months after (Nov 9 to Nov 27, 2020) MDA delivery between May 17 and June 1, 2019. Study participants included schoolchildren, as well as infants, children, and adolescents who were incidentally present at school on study days. All schoolchildren whose parents provided consent were eligible to participate in the study. Infants, children, and adolescents younger than 19 years who were not enrolled in the school but were incidentally present at schools on study days were also eligible to participate if their parents consented. Ivermectin, diethylcarbamazine citrate, and albendazole MDA was implemented nationally, with single doses of oral ivermectin (200 µg/kg), diethylcarbamazine citrate (6 mg/kg), and albendazole (400 mg) administered by the Ministry of Health. Scabies and impetigo were assessed by clinical skin examinations, and STHs using quantitative PCR. The primary (cluster-level) analysis adjusted for clustering while the secondary (individual-level) analysis adjusted for sex, age, and clustering. The primary outcomes of the study were prevalence ratios for scabies, impetigo, and STHs (Trichuris trichiura, Ascaris lumbricoides, Necator americanus, and moderate-to-heavy A lumbricoides infections) between baseline and 18 months from the cluster-level analysis. **Findings:** At baseline, 1043 (87·7%) of 1190 children registered for the study underwent clinical assessment for scabies and impetigo. The mean age of those who completed skin examinations was 9·4 years (SD 2·4) and 514 (53·8%) of 956 were female (87 participants with missing sex data were excluded from this percentage calculation). Stool samples were received for 541 (45·5%) of 1190 children. The mean age of those for whom stool samples were received was 9·8 years (SD 2·2) and 300 (55·5%) were female. At baseline, 348 (33·4%) of 1043 participants had scabies, and 18 months after MDA, 133 (11·1%) of 1196 participants had scabies (prevalence ratio 0·38, 95% CI 0·18-0·88; p=0·020) in the cluster-level analysis. At baseline, 130 (12·5%) of 1043 participants had impetigo, compared with 27 (2·3%) of 1196 participants at follow-up (prevalence ratio 0·14, 95% CI 0·07-0·27; p<0·0001). There was a significant reduction in T trichiura prevalence from baseline (26 [4·8%] of 541 participants) to 18-month follow-up (four [0·6%] of 623 participants; prevalence ratio 0·16, 95% CI 0·04-0·66; p<0·0001). In the individual-level analysis, moderate-to-heavy A lumbricoides infections reduced from 54 (10·0%; 95% CI 0·7-19·6) of 541 participants to 28 (4·5%, 1·2-8·4) of 623 participants (relative reduction 53·6%; 95% CI 9·1-98·1; p=0·018). **Interpretation:** Ivermectin, diethylcarbamazine citrate, and albendazole MDA was associated with substantial reductions in prevalence of scabies, impetigo, and T trichiura, and of moderate-to-heavy intensity A lumbricoides infections. Combination MDA could be used to support integrated control programmes to target multiple NTDs. **Funding:** National Health and Medical Research Council of Australia and the Department of Foreign Affairs and Trade Indo-Pacific Centre for Health Security.

An efficient method for viable cryopreservation and recovery of hookworms and other gastrointestinal nematodes in the laboratory.

Li H, Gazzola D, Hu Y, Aroian RV.

16-05-2023

Int J Parasitol.

https://pubmed.ncbi.nlm.nih.gov/37201563/

Hookworms (genera Ancylostoma and Necator) are amongst the most prevalent and important parasites of humans globally. These intestinal parasites ingest blood, resulting in anemia, growth stunting, malnutrition, and adverse pregnancy outcomes. They are also critical parasites of dogs and other animals. In addition, hookworms and hookworm products are being explored for their use in treatment of autoimmune and inflammatory diseases. There is thus a significant and growing interest in these mammalian host-obligate parasites. Laboratory research is hampered by the lack of good means of cryopreservation and recovery of parasites.

Here, we describe a robust method for long-term (≥3 year) cryopreservation and recovery of both Ancylostoma and Necator hookworms that is also applicable to two other intestinal parasites that passage through the infective L3 stage, Strongyloides ratti and Heligmosomoides polygyrus bakeri. The key is a revised recovery method, in which cryopreserved L1s are thawed and raised to the infective L3 stage using activated charcoal mixed with uninfected feces from a permissive host. This technique will greatly facilitate research on and availability of gastrointestinal parasitic nematodes with great importance to global health, companion animal health, and autoimmune/inflammatory disease therapies.

A general framework to support cost-efficient fecal egg count methods and study design choices for large-scale STH deworming programs-monitoring of therapeutic drug efficacy as a case study.

Coffeng LE, Vlaminck J, Cools P, Denwood M, Albonico M, Ame SM, Ayana M, Dana D, Cringoli G, de Vlas SJ, Fenwick A, French M, Kazienga A, Keiser J, Knopp S, Leta G, Matoso LF, Maurelli MP, Montresor A, Mirams G, Mekonnen Z, Corrêa-Oliveira R, Pinto SA, Rinaldi L, Sayasone S, Steinmann P, Thomas E, Vercruysse J, Levecke B.
17-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37196017/

Prevalence, intensity and associated risk factors of soil-transmitted helminth infections among individuals living in Bata district, Equatorial Guinea.

Ribado Meñe G, Dejon Agobé JC, Momo Besahà JC, Abaga Ondo Ndoho F, Abdulla S, Adegnika AA.
17-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37196007/

Background: Soil transmitted Helminths (STH) infections remain a public health concern worldwide, particularly in tropical and subtropical areas where these diseases are highly endemic. Knowing the prevalence and risk factors of the disease is crucial for efficient STH control strategies in endemic areas. The scarcity of epidemiological data on STH for Equatorial Guinea has motivated the decision to perform the present study. Methods: A cluster-based cross-sectional study was carried out in Bata district from November 2020 to January 2021. Stool samples were collected for the diagnostic of STH infections using Kato-Katz technique. Descriptive statistics was performed for determination of STH prevalence and intensity, while logistic regression models were used to assess the risk factors associated with STH infections. Results: A total of 340 participants were included in the study with a mean age of 24 years (SD = 23.7) and 1.2 female-to-male sex-ratio. The overall prevalence of any STH was 60% (95%CI: 55-65). The most prevalent species were Ascaris lumbricoides (43%, 95%CI: 37-48) and Trichuris trichiura (40%, 95%CI: 35-46). Intensity of infection were mainly light to moderate. A trend of association was observed between age and any STH infection (overall p-value = 0.07), with a significant difference observed between children aged 5-14 years as compared to those aged 1-4 (aOR 2.12; 95%CI: 1.02-4.43, p-value = 0.04), while locality was significantly associated with STH infection (overall p-value<0.001) with a higher odds observed for peri-urban area as compared to urban area (aOR 4.57; 95%CI: 2.27-9.60, p-value<0.001). Conclusion: Bata district is a high STH transmission area, where school-aged children and peri-urban areas are associated with a higher risk of any STH infection. This situation calls for a full implementation of the WHO recommendations for STH control; mass drug administration of anthelminthic twice a year to the whole population with great attention to school age children, and prioritizing peri-urban areas where safe water, improve sanitation, and hygiene education should be implemented to achieve a better control.

Updates on parasite infection prevalence in the Joseon period based on parasitological studies of human coprolites isolated from archaeological sites in the cities of Euijeongbu, Gumi, and Wonju.

Oh CS, Chai JY, Min S, Oh KT, Seol J, Song MK, Shin DH, Seo M.
Fév-2023
Parasites Hosts Dis.
https://pubmed.ncbi.nlm.nih.gov/37170469/

Parasite infection rates estimated by examining ancient coprolites can provide insights into parasitism in Joseon society. Using newly discovered Joseon period cases is essential to regularly update the parasite infection rates and reinforce the reliability of our previous estimations. In the present study, we investigated parasite infections in Joseon coprolites newly isolated from the cities of Euijeongbu, Gumi, and Wonju. We then updated the overall parasite infection rates of Joseon period samples (n= 30) as follows: 86.7% (26/30) for Trichuris trichiura, 56.7% (17/30) for Ascaris lumbricoides, 30.0% (9/30) for Clonorchis sinensis, and 30.0% (9/30) for Paragonimus westermani. The parasite infection rates in the Joseon society, estimated through coprolite examination, were very similar to those determined previously despite the addition of new cases to the existing data pool.

Comparative transcriptomics from intestinal cells of permissive and non-permissive hosts during Ancylostoma ceylanicum infection reveals unique signatures of protection and host specificity.

Langeland A, Grill E, Shetty AC, O'Halloran DM, Hawdon JM.
Mai-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/36883013/

Biliary parascarosis in a foal.

Sazmand A, Yavari M, Babaei M, Nourian A, Otranto D.
Mai-2023

Vet Med Sci.
https://pubmed.ncbi.nlm.nih.gov/36723790/

Migration of Ascaris lumbricoides through the papilla of Vater in humans, and entry into the biliary tree, is well-recognised. Ascaris suum and Toxocara vitulorum have been recovered from the liver of swine and buffalo. We necropsied a Persian Kurdish filly at age 6 months, weighing ~100 kg. Death evidently was caused by oleander (Nerium oleander) intoxication. An 8-cm adult male Parascaris was found at the lobar-left hepatic bile duct junction. We suggest that the nematode entered anteriorly into the hepatic tree, via the duodenum, major duodenal papilla, bile duct, left hepatic duct and finally the lobar duct. Considering the brief 4-h elapsed time between death and necropsy, and the 18-cm distance from the major duodenal papilla to the location of the parasite, we conclude that entry into the biliary tree likely occurred ante-mortem. We advise consideration of Parascaris infection in differential diagnosis of equine hepatic and pancreatic dysfunction.

Leishmaniose

TIM-3 increases the abundance of type-2 dendritic cells during Leishmania donovani infection by enhancing IL-10 production via STAT3.

Mishra M, Yadav M, Kumar S, Kumar R, Sen P.
18-05-2023
Cell Death Dis.
https://pubmed.ncbi.nlm.nih.gov/37202419/

Anti-leishmaniasis Effect of Staphylococcus Aureus Protein A on the Size of the Lesion and Parasitic Load.

Tavalaei Z, Zeinalian M, Khanahmad H, Hejazi H.
21-03-2023
Adv Biomed Res.
https://pubmed.ncbi.nlm.nih.gov/37200745/

Background: Many studies in the past have evaluated the role of immune system boosters in the treatment of leishmania major infection. Protein A (PA) is one of the structural components in peptidoglycan cell wall of gram-negative bacteria such as staphylococcus aurous which functions as a stimulator in the cellular immune system. The present study aims to evaluate the anti-inflammatory effect of PA on the recovery of leishmania major infection. Materials and methods: This study was conducted on 24 female Balb/c-infected mice. The experimental group received PA at a dose of 60 mg/kg for four weeks. There was no intervention for the negative control group; the third group received the solvent of PA and sterile H2O; and the positive control group received Amphotericin B at a dose of 1 mg/kg body weight. At the end of the treatment period, a real-time polymerase chain reaction (PCR) assay was performed to determine parasitic burden, and the size of the lesions was measured by caliper with an accuracy of 0.01 mm. Results: Results showed that PA did slightly decrease the wound spread and growth but not to an extent that can be considered statistically significant. Also, differences in cycle threshold (Ct) values between the treated group and the untreated group was not impressive. Conclusions: Although findings showed that PA isn't such a good candidate for leishmania treatment, it may still be suitable for therapies that use multiple drugs in combination to speed up the healing of leishmaniosis, an issue that merits evaluation in future studies.

In Vitro Study of the Leishmanicidal Activity of Perovskia Abrotanoides Terpenoid-Rich Fractions Against Leishmania Major (MRHO/IR/75/ER).

Dinani MS, Noushabadi SAE, Namdar F, Abharian PH, Hejazi SH, Sebghatollahi Z.
21-03-2023
Adv Biomed Res.
https://pubmed.ncbi.nlm.nih.gov/37200741/

Background: Cutaneous leishmaniasis (CL) is an ulcerative skin disease caused by some species of the genus *Leishmania*. Evidence shows that *Perovskia abrotanoides* is an important herbal medicine against *Leishmania*. This study was conducted to investigate the killing effect of terpenoid-rich fractions on promastigotes of *L. major* (MRHO/IR/75/ER). Material and method: The eluates of reverse phased medium pressure liquid chromatography (RP-MPLC) of the extract were subjected to thin-layer chromatography (TLC) and categorized into six final fractions. Primary proton nuclear magnetic resonance (H-NMR) spectroscopy confirmed fractions' nature. Fractions 4, 5, and 6 (F4, F5, F6) were identified as terpenoid-rich content. Two concentrations of 50 and 100 µg/ml were prepared to test leishmanicidal activity. Followed by treating promastigotes of *L. major* by the fractions in incubation times of 12, 24, and 48 hours, their viability was determined using a cell proliferation MTS ((3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium) assay. Result: F4, F5, and F6 showed significant killing activity on promastigotes of *L. major* in a concentration-dependent manner. The viability of promastigotes was significantly reduced at a concentration of 100 µg/ml compared to 50 µg/ml (P-value <0.05). Also, over time a significant decreasing trend in the viability of promastigotes confirmed the time-dependent manner of the fractions (P-value <0.01). Furthermore, F5 had the highest leishmanicidal activity at the first incubation time compared with other fractions. Conclusion: Terpenoid-rich fractions of the *P. abrotanoides* have a leishmanicidal activity that depends on time and concentration. Among them, F5 has the highest potency that may contain potent terpenoid constituents.

Radial spoke protein 9 is necessary for axoneme assembly in Plasmodium but not in trypanosomatid parasites.

Ramakrishnan C, Fort C, Marques SR, Ferguson DJP, Gransagne M, Baum J, Chaouch S, Mouray E, Kohl L, Wheeler RJ, Sinden RE.
18-05-2023
J Cell Sci.
https://pubmed.ncbi.nlm.nih.gov/37199084/

Seroprevalence of Visceral Leishmaniasis in Children Up To 12 Years Old of Rural Areas from Kermanshah Province, Western Part of Iran.

Sedaghatmanesh K, Khazan H, Akhoundi B, Khazaei S, Kakooei Z, Mohebali M.
Jan-Mar 2023
Iran J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37197081/

Background: After the earthquake in 2017 a few new cases of visceral leishmaniasis (VL) were reported from SarPol-e-Zahab district of Kermanshah Province, western part of Iran. This study was conducted to determine the seroprevalence in Kermanshah Province. Methods: This descriptive cross-sectional study was conducted on children up to 12 years of age from SarPol-e-Zahab County, Kermanshah Province, western part of Iran in 2021. For each individual, a questionnaire including age, sex, clinical features, history of the disease, and contact with canines as reservoir hosts of VL were completed, separately. To determine VL seroprevalence, blood samples were collected from the children and after centrifugation, the sera samples were separated and tested using Direct Agglutination Test (DAT) for detection of anti-*L. infantum* antibodies. Statistical analyses were performed using SPSS16. Results: Totally, 13 persons were seropositive; 7 samples with titer 1:800, 3 samples had 1:1600, 2 samples had 1:3200 and 1 sample had 1:6400. None of the seropositive cases had a history of kala-azar. There was no significant difference between males and females at titers of anti-*Leishmania* specific antibodies. Conclusion: *L. infantum* infection is being circulated with low prevalence in children up to 12 years old from SarPol-e-Zahab County but it is necessary that the surveillance system is regularly monitored among physicians and public health managers in the studied areas.

Cutaneous Leishmaniasis Lesion on the Ear from Kashan, Central Iran: A Case Report.

Hooshyar H, Rasti S, Rostamkhani P.
Jan-Mar 2023
Iran J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37197067/

Effects of SQ109 on Trichomonas vaginalis.

de Souza TG, Granado R, Benaim G, de Souza W, Benchimol M.
15-05-2023
Exp Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37196704/

Assessing nystatin cream treatment efficacy against Leishmania (L.) amazonensis infection in BALB/c model.

Gonçalves-Oliveira LF, Peixoto JF, Dias-Lopes G, Souza da Silva F, Côrtes LMC, Rocha HVA, Alves CR.
15-05-2023
Exp Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37196701/

The current scenario for cutaneous leishmaniasis treatment includes the use of first and second-choice drugs, both therapeutic strategies presenting several adverse effects and being related to an increment of treatment-refractory parasite strains. These facts encourage the search for new treatment approaches, including repositioning drugs, such as nystatin. Although in vitro assays show that this polyene macrolide compound has leishmanicidal activity, no in vivo evidence for a similar activity has been shown so far for the commercial nystatin cream formulation. This work assessed the effects of nystatin cream (25,000 IU/g) administered on mice in an amount to completely cover the paw surface of BALB/c mice infected with Leishmania (L.) amazonensis once a day, until a total of up to 20 doses. The data presented herein points to unequivocal evidence that treatment with this formulation causes a statistically significant reduction of swelling/edema in mice paws when compared to animal groups not submitted to this treatment regimen after the fourth week of infection: lesion sizes at the sixth ($p = 0.0159$), seventh ($p = 0.0079$) and eighth ($p = 0.0079$) week. Furthermore, swelling/edema reduction relates to a decrease in parasite load in the footpad (~48%) and in draining lymph nodes (~68%) at eight weeks post-infection. This is the first report of the effectiveness of nystatin cream used as a topical treatment in BALB/c model for cutaneous leishmaniasis.

Virus-Induced Lysis of Tumor and Other Pathogenic Unicellular Entities and Its Potential to Treat Leishmaniasis.

Fernandes J.
16-05-2023
DNA Cell Biol.
https://pubmed.ncbi.nlm.nih.gov/37195672/

C3/CD11b-Mediated Leishmania major Internalization by Neutrophils Induces Intraphagosomal NOX2-Mediated Respiratory Burst but Fails to Eliminate Parasites and Induces a State of Stalled Apoptosis.

Ranson AJ, Carneiro MB, Perks B, Penner R, Melo L, Canton J, Egen J, Peters NC.
17-05-2023
J Immunol.
https://pubmed.ncbi.nlm.nih.gov/37195185/ ,

Recruited neutrophils are among the first phagocytic cells to interact with the phagosomal pathogen Leishmania following inoculation into the mammalian dermis. Analysis of Leishmania-infected neutrophils has revealed alterations in neutrophil viability, suggesting that the parasite can both induce or inhibit apoptosis. In this study, we demonstrate that entry of Leishmania major into murine neutrophils is dependent on the neutrophil surface receptor CD11b (CR3/Mac-1) and is enhanced by parasite opsonization with C3. Infected neutrophils underwent robust NADPH oxidase isoform 2 (NOX2)-dependent respiratory burst based on detection of reactive oxygen

species within the phagolysosome but largely failed to eliminate the metacyclic promastigote life cycle stage of the parasite. Infected neutrophils displayed an "apoptotic" phosphatidylserine (PS)-positive phenotype, which was induced by both live and fixed parasites but not latex beads, suggesting that PS expression was parasite specific but does not require active infection. In addition, neutrophils from parasite/neutrophil coculture had increased viability, decreased caspase 3, 8, and 9 gene expression, and reduced protein levels of both the pro and cleaved forms of the classical apoptosis-inducing executioner caspase, Caspase 3. Our data suggest that CD11b-mediated Leishmania internalization initiates respiratory burst and PS externalization, followed by a reduction in both the production and cleavage of caspase 3, resulting in a phenotypic state of "stalled apoptosis."

First report of Leishmania (Mundinia) martiniquensis in South American territory and confirmation of Leishbunyavirus infecting this parasite in a mare.

Mendes Junior AAV, Filgueira CPB, Miranda LFC, de Almeida AB, Cantanhêde LM, Fagundes A, Pereira SA, Menezes RC, Cupolillo E.
15-05-2023
Mem Inst Oswaldo Cruz.
https://pubmed.ncbi.nlm.nih.gov/37194810/

Background: Epidemiological data related to leishmaniases or Leishmania infection in horses are scarce. However, studies carried out in different regions in the world showed equids parasitised by Leishmania braziliensis, L. infantum and L. martiniquensis. Objectives: Identify the Leishmania species causing cutaneous leishmaniasis in a mare, living in Rio de Janeiro State (Brazil), and search the presence of Leishmania viruses in the isolated parasite. Methods: Isoenzymes and polymerase chain reaction (PCR) targeting ITSrDNA region followed by sequencing were conducted for typing the isolated parasite. A search for Leishmania virus infection was also performed. Findings: The mare presented skin nodules and ulcers in the left pinna caused by Leishmania spp. that was detected by culture and PCR. The parasite was identified as Leishmania (Mundinia) martiniquensis, infected by Leishbunyavirus (LBV), representing the first description of this species in South America. The animal travelled to different Brazilian regions, but not to outside the country. Main conclusions: The worldwide distribution of L. martiniquensis and its infection by LBV were confirmed in this study, indicating the autochthonous transmission cycle in Brazil. The clinical profile of the disease in the mare, showing fast spontaneous healing of cutaneous lesions, may indicate that skin lesions related to L. martiniquensis infection in horses might be underdiagnosed.

Knockout of protein phosphatase 1 in Leishmania major reveals its role during RNA polymerase II transcription termination.

Kieft R, Zhang Y, Yan H, Schmitz RJ, Sabatini R.
17-05-2023
Nucleic Acids Res.
https://pubmed.ncbi.nlm.nih.gov/37194692/

The genomes of kinetoplastids are organized into polycistronic transcription units that are flanked by a modified DNA base (base J, beta-D-glucosyl-hydroxymethyluracil). Previous work established a role of base J in promoting RNA polymerase II (Pol II) termination in Leishmania major and Trypanosoma brucei. We recently identified a PJW/PP1 complex in Leishmania containing a J-binding protein (JBP3), PP1 phosphatase 1, PP1 interactive-regulatory protein (PNUTS) and Wdr82. Analyses suggested the complex regulates transcription termination by recruitment to termination sites via JBP3-base J interactions and dephosphorylation of proteins, including Pol II, by PP1. However, we never addressed the role of PP1, the sole catalytic component, in Pol II transcription termination. We now demonstrate that deletion of the PP1 component of the PJW/PP1 complex in L. major, PP1-8e, leads to readthrough transcription at the 3'-end of polycistronic gene arrays. We show PP1-8e has in vitro phosphatase activity that is lost upon mutation of a key catalytic residue and associates with PNUTS via the conserved RVxF motif. Additionally, purified PJW complex with associated PP1-8e, but not complex lacking PP1-8e, led to dephosphorylation of Pol II, suggesting a direct role of PNUTS/PP1 holoenzymes in regulating transcription termination via dephosphorylating Pol II in the nucleus.

Isolation of potent antileishmanial agents from Artemisia kermanensis Podlech using bioguided fractionation.

Soleimanifard S, Saeedi S, Yazdiniapour Z.
Juin-2023
J Parasit Dis.
https://pubmed.ncbi.nlm.nih.gov/37193491/

Insights on Host-Parasite Immunomodulation Mediated by Extracellular Vesicles of Cutaneous Leishmania shawi and Leishmania guyanensis.

Weber JI, Rodrigues AV, Valério-Bolas A, Nunes T, Carvalheiro M, Antunes W, Alexandre-Pires G, da Fonseca IP, Santos-Gomes G.
07-04-2023
Cells.
https://pubmed.ncbi.nlm.nih.gov/37190011/

Survival time and prognostic factors in canine leishmaniosis in a non-endemic country treated with a two-phase protocol including initial allopurinol monotherapy.

de Jong MK, Rappoldt A, Broere F, Piek CJ.
15-05-2023
Parasit Vectors.
https://pubmed.ncbi.nlm.nih.gov/37189181/

Background: Leishmania infantum is an intracellular protozoan parasite which is endemic in countries of the

Mediterranean Basin. Leishmaniosis is increasingly diagnosed in non-endemic areas due to the relocation of dogs from endemic areas and the travel of dogs to and from these areas. The prognosis of leishmaniosis in these dogs may differ from that of those in endemic areas. The aims of this study were (1) to determine the Kaplan-Meier estimated survival time for dogs with leishmaniosis in the Netherlands (a non-endemic country), (2) to determine if clinicopathological variables at the time of diagnosis predicted the survival of these dogs, and (3) to evaluate the effect of a two-phase therapy protocol of allopurinol monotherapy followed by meglumine antimoniate and/or miltefosine in the case of incomplete remission or relapse. Methods: The database of the Department of Clinical Sciences of Companion Animals of the Faculty of Veterinary Medicine, Utrecht University was investigated for leishmaniosis patients. Patient records were reviewed for signalment and clinicopathological data at the time of diagnosis. Only treatment-naive patients were included. Follow-up was performed during the study by phone contact and included treatment received and date and cause of death. Univariate analysis was performed using the Cox proportional hazards regression model. Results: The estimated median Kaplan-Meier survival time was 6.4 years. In the univariate analysis, increases in monocyte, plasma urea and creatinine concentrations, and urine protein to creatinine ratio were all significantly associated with decreased survival time. The majority of patients only received allopurinol monotherapy. Conclusions: Canine leishmaniosis patients in our study population in the Netherlands, which is non-endemic for the disease, had an estimated Kaplan-Meier median survival time of 6.4 years, which is comparable to the outcome of other reported therapy protocols. Increased plasma urea and creatinine concentrations and monocyte concentration were statistically associated with an increased risk of death. We conclude that initial allopurinol monotherapy for 3 months should be effective in more than half of canine leishmaniosis cases, provided there is adequate follow-up, and that meglumine antimoniate or miltefosine therapy should be started as the second phase of the protocol in cases where remission is incomplete or there is a relapse.

Host M-CSF induced gene expression drives changes in susceptible and resistant mice-derived BMdMs upon Leishmania major infection.

Bouabid C, Rabhi S, Thedinga K, Barel G, Tnani H, Rabhi I, Benkahla A, Herwig R, Guizani-Tabbane L.
28-04-2023
Front Immunol.
https://pubmed.ncbi.nlm.nih.gov/37187743/

Design and synthesis of N-acyl and dimeric N-Arylpiperazine derivatives as potential antileishmanial agents.

Ansari SB, Kamboj S, Ramalingam K, Meena R, Lal J, Kant R, Shukla SK, Goyal N, Reddy DN.
07-05-2023
Bioorg Chem.
https://pubmed.ncbi.nlm.nih.gov/37186964/

The current regime for leishmaniasis is associated with several adverse effects, expensive, parenteral treatment for longer periods and the emergence of drug resistance. To develop affordable and potent antileishmanial agents, a series of N-acyl and homodimeric aryl piperazines were synthesized with high purity, predicted druggable properties by in silico methods and investigated their antileishmanial activity. The in vitro biological activity of synthesized compounds against clinically validated intracellular amastigote and extracellular promastigote form of Leishmania donovani parasite showed eight compounds inhibited 50% amastigotes growth below 25 µM. The half maximal inhibitory concentration (IC_{50}) and cytotoxicity assessment of eight active compounds, 4a, 4d and 4e demonstrated activity with an IC_{50} 2.0 - 9.1 µM and selectivity index 10 - 42. Compound 4d (IC_{50} 2.0 µM, SI = 42) found to be the best among them with four-folds more potent and eight-folds less toxic than the control drug miltefosine. Overall, results demonstrated that compound 4d is a promising lead candidate for further development as antileishmanial drug.

Intralesional Antimonial Drug Treatment for Leishmania braziliensis Cutaneous Leishmaniasis: The Knowns and the Unknowns.

Aronson NE, Billick K.
26-04-2023
Clin Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37185765/

Development of a novel immunoFET technology-based POC assay for detection of Leishmania donovani and Leishmania major.

Yentur Doni N, Bertani PJ, Volpedo G, Saljoughian N, Varikuti S, Matlashewski G, Lu W, Satoskar AR.
15-05-2023
Parasite Immunol.
https://pubmed.ncbi.nlm.nih.gov/37183939/

A novel outlook in the delivery of artemisinin: production and efficacy in experimental visceral leishmaniasis.

Akbari M, Heli H, Oryan A, Hatam G.
15-05-2023
Pathog Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37183476/

Analysis of exotic pathogens found in a large group of imported dogs following an animal welfare investigation.

Wright I, Whitfield V, Hanaghan R, Upjohn M, Boyden P.
14-05-2023
Vet Rec.
https://pubmed.ncbi.nlm.nih.gov/37183184/

The visceral form of leishmaniasis (VL), due to infection by *Leishmania infantum*, is a neglected tropical disease. The accessible therapeutic options are limited. Artemisinin is an efficient antileishmanial product with poor biological

availability that requires high repetition of therapeutic doses in VL. Solid lipid nanoparticles (SLNs) provide targeted delivery, increase bioavailability and reduce toxicity of the traditional therapeutic strategy. The spherical shape artemisinin-loaded SLNs were prepared in a particle diameter of 222.0 ± 14.0 nm. The SLNs showed no particular toxic effect on the parasites, whereas the native artemisinin demonstrated a significant toxicity rate of 31% in viability of the promastigotes at the 250 µg/ml concentration. The therapeutic efficacy of the artemisinin-loaded SLNs was demonstrated in the experimental VL, using the *L. infantum*-infected BALB/c mice, in the present study. The 10 and 20 mg/kg doses of artemisinin-loaded SLNs showed higher level of antileishmanial efficacy compared with the free artemisinin. There was a significant diminishing of the parasite burden in liver (84.7 ± 4.9%) and spleen (85.0 ± 3.1%) and hepatosplenomegaly by the artemisinin-loaded SLNs treated at 20 mg/kg compared to the free artemisinin. Therefore, the present study supports the superior efficacy of artemisinin-loaded SLNs over the free artemisinin and could be considered as a new therapeutic strategy in the treatment of leishmaniasis.

IL-18 is required for the T_H1-adaptation of T_{REG} cells and the selective suppression of T_H17 responses in acute and chronic infections.

Alvarez F, Istomine R, Da Silva Lira Filho A, Al-Aubodah TA, Huang D, Okde R, Olivier M, Fritz JH, Piccirillo CA.
12-05-2023
Mucosal Immunol.
https://pubmed.ncbi.nlm.nih.gov/37182738/

Co-infection of Leishmania infantum and a Crithidia-related species in a case of refractory relapsed visceral leishmaniasis with non-ulcerated cutaneous manifestation in Brazil.

Rogerio LA, Takahashi TY, Cardoso L, Takamiya NT, de Melo EV, de Jesus AR, de Oliveira FA, Forrester S, Jeffares DC, da Silva JS, Ribeiro JM, Almeida RP, Maruyama SR.
12-05-2023
Int J Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37182549/

The Antileishmanial Activity of Eugenol Associated with Lipid Storage Reduction Rather Than Membrane Properties Alterations.

Hughes K, Le TB, Van Der Smissen P, Tyteca D, Mingeot-Leclercq MP, Quetin-Leclercq J.
04-05-2023
Molecules.
https://pubmed.ncbi.nlm.nih.gov/37175277/

Leishmaniasis is a neglected tropical disease that still infects thousands of people per year throughout the world. The occurrence of resistance against major treatments for this disease causes a healthcare burden in low-income countries. Eugenol is a phenylpropanoid that has shown in vitro antileishmanial activity against *Leishmania mexicana mexicana* (*Lmm*) promastigotes with an IC_{50} of 2.72 µg/mL and a high selectivity index. Its specific mechanism of action has yet to be studied. We prepared large unilamellar vesicles (LUVs), mimicking *Lmm* membranes, and observed that eugenol induced an increase in membrane permeability and a decrease in membrane fluidity at concentrations much higher than IC_{50}. The effect of eugenol was similar to the current therapeutic antibiotic, amphotericin B, although the latter was effective at lower concentrations than eugenol. However, unlike amphotericin B, eugenol also affected the permeability of LUVs without sterol. Its effect on the membrane fluidity of *Lmm* showed that at high concentrations (≥22.5× IC_{50}), eugenol increased membrane fluidity by 20-30%, while no effect was observed at lower concentrations. Furthermore, at concentrations below 10× IC_{50}, a decrease in metabolic activity associated with the maintenance of membrane integrity revealed a leishmaniostatic effect after 24 h of incubation with *Lmm* promastigotes. While acidocalcisomes distribution and abundance revealed by *Trypanosoma brucei* vacuolar H^+ pyrophosphatase (TbVP1) immunolabeling was not modified by eugenol, a dose-dependent decrease of lipid droplets assessed by the Nile Red assay was observed. We hereby demonstrate that the antileishmanial activity of eugenol might not directly involve plasma membrane sterols such as ergosterol, but rather target the lipid storage of *Lmm*.

The in vitro and in vivo effects of Lucilia sericata larval secretions on Leishmania major.

Baghbani MR, Rashidi S, Naderi Shahabadi S, Ebrahimi S, Alipour S, Asgari Q, Motazedian MH.
Juin-2023
J Parasit Dis.
https://pubmed.ncbi.nlm.nih.gov/37193496/

The emerging of drug resistant against *Leishmania* parasites prompts scientists to seek for novel therapeutic strategies against theses infectious protozoan parasites. Among different strategies, the use of larvae secretions could be suggested as a possible therapy with low side effects. Accordingly, the current study evaluated the in vitro and in vivo effects of *Lucilia sericata* larval secretions on *Leishmania major*, the causative agent of cutaneous leishmaniasis (CL). After preparation of *L. sericata* larval stages (L2 and L3) secretions, the potential effects of secretions were evaluated against *L. major* promastigotes and amastigotes (in vitro) using MTT assay. The cytotoxicity effects of secretions were also checked on uninfected macrophages. In addition, in vivo experiments were also conducted to investigate the effects of larvae's secretions on the CL lesions induced in the BALB/c mice. Although the increased concentration of larvae secretions exhibited a direct effect on the promastigotes proliferation (viability), contrarily, L2 secretions at a concentration of 96 µg/ml represented the highest inhibitory effect on parasite (amastigotes) burden in infected macrophages. Interestingly, L3 secretions > 60 µg/ml induced inhibitory effects on amastigotes. The results relevant to the cytotoxicity effects of L2 and L3 secretions on uninfected-macrophages showed a dose

dependent correlation. In vivo results were also significant, compared to the positive control group. This study suggested the plausible inhibitory effects of *L. sericata* larvae's secretions on the *L. major* amastigotes and CL lesions progression. It seems that the characterization of all effective components/proteins in the larvae secretions and their specific targets in parasite structure or in cell (macrophage) responses could further reveal more details regarding the anti-leishmanial properties of these compounds.

Feline leishmaniosis with focus on ocular manifestation: a case report.

Schäfer I, Schmidt A, Gräßer F, Schieszler A, Aupperle-Lellbach H, Loesenbeck G, Gentil M, Müller E, Naucke TJ.
12-05-2023
Parasit Vectors.
https://pubmed.ncbi.nlm.nih.gov/37173777/

Formation and three-dimensional architecture of Leishmania adhesion in the sand fly vector.

Yanase R, Moreira-Leite F, Rea E, Wilburn L, Sádlová J, Vojtkova B, Pružinová K, Taniguchi A, Nonaka S, Volf P, Sunter JD.
10-05-2023
Elife.
https://pubmed.ncbi.nlm.nih.gov/37162189/

In Vivo Antileishmanial Effect of 3,5-Diaryl-isoxazole Analogues Based on Veraguensin, Grandisin, and Machilin G: A Glance at a Preclinical Study.

das Neves AR, Carvalho DB, Silva F, Rosalem RF, Pelizaro BI, Castilho PF, Oliveira KMP, Cassemiro NS, Pessatto LR, Paredes-Gamero EJ, Piranda EM, Silva DB, Arruda CCP, Baroni ACM.
12-05-2023
ACS Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37103973/

New treatment approaches targeting cutaneous leishmaniasis (CL) are required since conventional drugs exhibit limitations due to their several adverse effects and toxicity. In this study, we aimed to evaluate the in vivo intralesional treatment efficacy of five isoxazole derivatives previously synthesized and effective in vitro against intracellular amastigote forms of *Leishmania (L.) amazonensis*. Among the tested analogues, **7** exhibited relevant in vivo therapeutic effects. The in silico predictions provided interesting information about the toxicity, suggesting the safety of analogue **7**. Experiments performed with *Salmonella typhimurium* strains (TA98, TA100, and TA102) showed a non-mutagenicity profile of **7**. The treatment of *Leishmania*-infected BALB/c mice with isoxazole **7** showed remarkably smaller CL lesions and decreased the parasitism (by 98.4%) compared to the control group. Hence, analogue **7** is a promising drug candidate and alternative treatment for CL caused by *L. amazonensis*.

Diversity and temporal distribution of sand flies in an endemic area of cutaneous leishmaniasis in Centre-West Colombia.

Posada-López L, Galvis-Ovallos F, Vélez-Mira A, Vélez ID, Galati EAB.
12-05-2023
J Med Entomol.
https://pubmed.ncbi.nlm.nih.gov/37043628/

The community structure of sand flies indicates the level of adaptation of vector species in a region, and in the context of vector management and control, this information allows for identifying the potential risks of pathogen transmission. This study aimed to analyze sand fly diversity and spatial-temporal distribution in an endemic area of cutaneous leishmaniasis. The study was carried out in the Carrizales hamlet (Caldas), between September 2019 and October 2021. The monthly distribution of sand fly species was evaluated through collections with CDC traps. Shannon and evenness indices were calculated and used to compare species frequencies at each house. The association between climatic variables and the frequency of sand flies was evaluated using Spearman's correlation. A total of 6,265 females and 1,958 males belonging to 23 species were found. Low diversity and evenness were observed, with the dominance of Nyssomyia yuilli yuilli (Young & Porter). Ecological and diversity indices did not reveal differences between the houses. The sand fly community was composed of 3 dominant species, Ny. yuilli yuilli, Psychodopygus ayrozai (Barretto & Coutinho), and Ps. panamensis (Shannon), representing 75.8% of the total catches. No statistical association was found between the absolute frequency of sand flies, rainfall, and temperature. The results show one dominant species, this fact has epidemiological relevance since density influences parasite-vector contact. The high densities of sand flies recorded in peri- and intradomiciliary areas highlight the necessity of periodic monitoring of vector populations and control activities to reduce the risk of Leishmania transmission in this endemic area.

Antiprotozoal compounds from Mikania periplocifolia (Asteraceae).

Laurella LC, Elso OG, Rodriguez RN, Viecenz JM, Alonso MR, Bontempi EJ, Malchiodi E, Catalán CAN, Cazorla SI, Sülsen VP.
Juin2023
Fitoterapia.
https://pubmed.ncbi.nlm.nih.gov/37019368/

In vitro and in vivo antileishmanial activity of the hanging sedge flavonoids based on bio- guided fractionation assay.

Moradian N, Hatam G, Hamedi A, Pasdaran A.
Juin-2023
Chem Biol Drug Des.
https://pubmed.ncbi.nlm.nih.gov/36892494/

As a major public health issue, cutaneous leishmaniasis (CL) has a number of complications, including drug

resistance and poor response to conventional treatments. Over the last decade, research on natural sources for finding new antileishmanial agents has been a critical part of tropical disease research. Natural products also should be regarded as one of the most valuable applications for CL infection drug development. In this study, we assessed the in vitro and in vivo antileishmanial potential of Carex pendula Huds. (hanging sedge) methanolic extract and its fractions against Leishmania major produced cutaneous infection. Although the methanolic extract and its fractions exhibited suitable activity, the ethyl acetate fraction showed the best activity (with the half maximal inhibitory concentration IC_{50} = 1.627 ± 0.211 mg/mL). The toxicity and selectivity indices (SI) of all samples were determined in murine peritoneal macrophage cells (J774A.1) using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) test. The flavonoid components of the ethyl acetate fraction were identified using liquid chromatography electrospray ionization mass spectrometry (LC-ESI MS/MS). Nine chemical compounds were identified in this fraction, including three flavonols, four flavanonols, and two flavan derivatives. L. major-infected mice were used as an in vivo model because the methanolic extract was effective against L. major promastigotes in the mammalian cell line J774A.1 with SI = 2.514 (tail lesion size model). In silico analysis of identified compounds also revealed a favorable interaction between compounds 2-5 and L. major protein targets (3UIB, 4JZX, 4JZB, 5L4N, and 5L42). According to the findings of this study, the ethyl acetate fraction (as flavonoid fraction) exhibited considerable in vitro antileishmanial activity.

Discovery of Antitrypanosomal Indolylacetamides by a Deconstruction-Optimization Strategy Applied to Paullones.

Lindhof JC, Ihnatenko I, Müller MJ, Orban OCF, Ortíz C, Benítez D, Dibello E, Seidl LL, Comini MA, Kunick C.
16-05-2023
ChemMedChem.
https://pubmed.ncbi.nlm.nih.gov/36847711/

Transcriptome Analysis of Dermal Fibroblasts Derived From Visceral Leishmaniasis and Post-Kala-Azar Dermal Leishmaniasis Patients Reveal Disease-Specific Gene Expression and Pathological Regulation.

Singh S, Madhukar M, Dikhit MR, Ravidas VN, Pandey K, Sen A.
12-05-2023
J Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/36821723/

Sciopemyia sordellii in the Neotropical region: distribution, biology, and ecology.

Chaves Júnior SP, Baggio RA, Szelag EA, Shimabukuro PHF, de Andrade AJ.
Juin-2023
Med Vet Entomol.
https://pubmed.ncbi.nlm.nih.gov/36533381/

The species Sciopemyia sordellii (Diptera, Phlebotominae) is widely distributed throughout the American continent. This raises doubts about their identity as a single biological entity and points to the occurrence of species complex. Here, we review the geographic distribution of S. sordellii in the Neotropical region, as well as data on its biology and ecology. Records were obtained from literature and from specimens deposited in biological collections. In total, 149 records were analysed, from 12 countries in America. However, after taxonomic revision, some specimens were wrongly identified as S. sordellii, especially those from Peru, putting in doubt the occurrence of the species in that country. In Brazil, it has been recorded in all five geographic regions and collected in different biomes, besides to other ecotypes such as caves. Furthermore, its presence in an anthropized environment has also been reported. Some studies have also diagnosed Leishmania DNA in S. sordellii, indicating that parasite circulation is being maintained between the reservoir hosts. The data evaluated in our study allowed us to provide updated information on the distribution of S. sordellii in America, which may be useful in the taxonomy of this species.

Response to thermal and infection stresses in an American vector of visceral leishmaniasis.

Martins KA, Morais CS, Broughton SJ, Lazzari CR, Bates PA, Pereira MH, Dillon RJ.
Juin-2023
Med Vet Entomol.
https://pubmed.ncbi.nlm.nih.gov/36458853/

Lutzomyia longipalpis is known as one of the primary insect vectors of visceral leishmaniasis. For such ectothermic organisms, the ambient temperature is a critical life factor. However, the impact of temperature has been ignored in many induced-stress situations of the vector life. Therefore, this study explored the interaction of Lu. longipalpis with temperature by evaluating its behaviour across a thermal gradient, thermographic recordings during blood-feeding on mice, and the gene expression of heat shock proteins (HSP) when insects were exposed to extreme temperature or infected. The results showed that 72 h after blood ingestion, Lu. longipalpis became less active and preferred relatively low temperatures. However, at later stages of blood digestion, females increased their activity and remained at higher temperatures. Real-time imaging showed that the body temperature of females can adjust rapidly to the host and remain constant until the end of blood-feeding. Insects also increased the expression of HSP90(83) during blood-feeding. Our findings suggest that Lu. longipalpis interacts with temperature by using its behaviour to avoid temperature-induced physiological damage during the gonotrophic cycle. However, the expression of certain HSP might be triggered to mitigate thermal stress in situations where a behavioural response is not the best option.

The many faces of a macrophage.

Vicari P.

Juin-2023
Morphologie.
https://pubmed.ncbi.nlm.nih.gov/36207239/

Lèpre

A comparison of the quality of images of chest X-ray between handheld portable digital X-ray & routinely used digital X-ray machine.

Kamal R, Singh M, Roy S, Adhikari T, Gupta AK, Singh H, Rao VV, Panda S, Khan AM, Bhargava B.
Fév-Mar 2023
Indian J Med Res.
https://pubmed.ncbi.nlm.nih.gov/37202939/

Background & objectives: Chest X-ray (CXR) is an important screening tool for pulmonary tuberculosis (TB). Accessibility to CXR facilities in difficult-to-reach and underserved populations is a challenge. This can potentially be overcome by deploying digital X-ray machines that are portable. However, these portable X-ray machines need to be validated before their deployment in the field. Here, we compare the image quality of CXR taken by a newly developed handheld X-ray machine with routinely used reference digital X-ray machine through the conduct of a feasibility study. Methods: A total of 100 participants with suspected pulmonary TB were recruited from the outpatient departments of a medical college and a community health centre in Agra. Each participant underwent CXR twice, once with each machine. Both sets of de-identified images were independently read by two radiologists, who were blinded to the type of X-ray machine used. The primary outcome was agreement between image qualities produced by these two machines. Results: The intra-observer (radiologist) agreements regarding the status of the 15 CXR parameters ranged between 74 per cent and 100 per cent, with an unweighted mean of 87.2 per cent (95% confidence interval: 71.5-100). The median Cohen's kappa values for intra-observer agreement were 0.62 and 0.67 for radiologists 1 and 2, respectively. In addition, on comparison of the overall median score of quality of the image, the handheld machine images had a higher score for image quality. Interpretation & conclusions: The current study shows that a handheld X-ray machine, which is easy to use and can potentially be carried to any area, produces X-ray images with quality that is comparable to digital X-ray machines routinely used in health facilities.

Mass drug administration in neglected tropical diseases: beyond elimination.

Karthikeyan K.
Juin-2023
Lancet Glob Health.
https://pubmed.ncbi.nlm.nih.gov/37202012/

A Study of Cutaneous Adverse Drug Reactions at a Tertiary Care Center in Andhra Pradesh, India.

Ashifha S, Vijayashree J, Vudayana K, Chintada D, P P, G P, Unnikrishnan P.
Avr-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37197134/

A New Step in Postexposure Prophylaxis for Leprosy.

Scollard DM.
18-05-2023
N Engl J Med.
https://pubmed.ncbi.nlm.nih.gov/37195947/

Single-Dose Rifapentine in Household Contacts of Patients with Leprosy.

Wang L, Wang H, Yan L, Yu M, Yang J, Li J, Li J, Ning Y, Jiang H, Shi Y, Zhang W, Xiong L, Liu J, Kuang Y, Wang H, He J, Wang D, Li B, Liu Y, Shui T, Wang Y, Chen H, Sha X, Long H, Yu X, Shen C, Shen J, Yang X, Gu H, Zhang G, Wang B.
18-05-2023
N Engl J Med.
https://pubmed.ncbi.nlm.nih.gov/37195940/

Background: Previous studies have suggested that a single dose of rifampin has protective effects against leprosy in close contacts of patients with the disease. Rifapentine was shown to have greater bactericidal activity against *Mycobacterium leprae* than rifampin in murine models of leprosy, but data regarding its effectiveness in preventing leprosy are lacking. Methods: We conducted a cluster-randomized, controlled trial to investigate whether single-dose rifapentine is effective in preventing leprosy in household contacts of patients with leprosy. The clusters (counties or districts in Southwest China) were assigned to one of three trial groups: single-dose rifapentine, single-dose rifampin, or control (no intervention). The primary outcome was the 4-year cumulative incidence of leprosy among household contacts. Results: A total of 207 clusters comprising 7450 household contacts underwent randomization; 68 clusters (2331 household contacts) were assigned to the rifapentine group, 71 (2760) to the rifampin group, and 68 (2359) to the control group. A total of 24 new cases of leprosy occurred over the 4-year follow-up, for a cumulative incidence of 0.09% (95% confidence interval [CI], 0.02 to 0.34) with rifapentine (2 cases), 0.33% (95% CI, 0.17 to 0.63) with rifampin (9 cases), and 0.55% (95% CI, 0.32 to 0.95) with no intervention (13 cases). In an intention-to-treat analysis, the cumulative incidence in the rifapentine group was 84% lower than that in the control group (cumulative incidence ratio, 0.16; multiplicity-adjusted 95% CI, 0.03 to 0.87; P = 0.02); the cumulative incidence did not differ significantly between the rifampin group and the control group (cumulative incidence ratio, 0.59; multiplicity-adjusted 95% CI, 0.22 to 1.57; P = 0.23). In a per-protocol analysis, the cumulative incidence was 0.05% with rifapentine, 0.19% with rifampin, and 0.63% with no intervention. No severe adverse events were observed. Conclusions: The incidence of leprosy among household contacts over 4 years was lower with single-dose rifapentine than with no intervention. (Funded by the Ministry of Health of China

and the Chinese Academy of Medical Sciences; Chinese Clinical Trial Registry number, ChiCTR-IPR-15007075.).

Genotyping of Mycobacterium leprae strains in south central coast and central highlands of Vietnam.

Chau HTT, Nguyen PNH, Nguyen HB.
Avr-2023
Iran J Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37193237/

Background and objectives: Leprosy remains an important health problem worldwide. It is one of the oldest recorded diseases of humankind. In this study, we expanded the analysis of the geographic distribution of *Mycobacterium leprae* by investigating SNPs and *rpoT* genotypes in South Central Coast and Central Highlands clinical isolates, providing insights into the distribution and transmission of leprosy in Vietnam and in this geographic region. Materials and methods: 27 clinical isolates from the patients, determined the genotypes of *M. leprae* by SNP and *rpoT* polymorphism. SNP genotyping was performed by PCR amplification and sequencing, *rpoT* genotyping by PCR amplification and electrophoresis. Results: All of 27 DNA samples (100%) were positive with RLEP TaqMan PCR (Ct value range is 18-32 on 3 replicates). SNP type 1 was identified in 15 isolates (56%), while SNP type 3 was detected in 12 samples (44%). SNP type 2 and type 4, were not detected. The 6-base repeat region of the *rpoT* gene was amplified by PCR and analyzed by 4% MetaPhor™ agarose gel electrophoresis. All isolates yielded amplification products of 91-bp, but not 97-bp. Conclusion: This study showed that 56% of isolates belonged to type 1, 44% to type 3. In addition, all samples have the 3-copy hexamer genotype in the *rpoT* gene.

Investigating the sustainability of self-help programmes in the context of leprosy and the work of leprosy missions in Nigeria, Nepal and India: a qualitative study protocol.

Choudhury S, Ilozumba O, Darlong J, Govindasamy K, Tsaku PA, Udo S, Shrestha D, Napit IB, Ugwu L, Meka A, Sartori J, Griffiths F, Lilford RJ.
16-05-2023
BMJ Open.
https://pubmed.ncbi.nlm.nih.gov/37192811/

Introduction: Leprosy occurs among very poor people who may be stigmatised and pushed further to the margins of society. Programmes to improve social integration and stimulate economic development have been implemented to help break the vicious cycle of poverty, reduced quality of life and ulcer recurrence. These involve forming groups of people, with a common concern, to provide mutual support and form saving syndicates-hence the term 'self-help groups' (SHGs). While there is literature on the existence and effectiveness of SHGs during the funded periods, little is known about their sustainability. We aim to explore the extent to which SHG programme activities have continued beyond the funding period and record evidence of sustained benefits. Methods and analysis: In India, Nepal and Nigeria, we identified programmes funded by international non-governmental organisations, primarily aimed at people affected by leprosy. In each case, financial and technical support was allocated for a predetermined period (up to 5 years).We will review documents, including project reports and meeting minutes, and conduct semistructured interviews with people involved in delivery of the SHG programme, potential beneficiaries and people in the wider environment who may have been familiar with the programme. These interviews will gauge participant and community perceptions of the programmes and barriers and facilitators to sustainability. Data will be analysed thematically and compared across four study sites. Ethics and dissemination: Approval was obtained from the University of Birmingham Biomedical and Scientific Research Ethics Committee. Local approval was obtained from: The Leprosy Mission Trust India Ethics Committee; Federal Capital Territory Health Research Ethics Committee in Nigeria and the Health Research Ethics Committee of Niger State Ministry of Health; University of Nigeria Teaching Hospital and the Nepal Health and Research Council. Results will be disseminated via peer-reviewed journals, conference presentations and community engagement events through the leprosy missions.

Case Report: Lepromatous Leprosy Masquerading as Acute Suppurative Lymphadenitis.

Meena M, Joshi R, Yadav V, Singh P, Shreya K, Pandey G.
15-05-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/37188342/

Interplay among differential exposure to Mycobacterium leprae and TLR4 polymorphism impacts the immune response in household contacts of leprosy patients.

Cunha EHM, Marçal PHF, Gama RS, de Oliveira LBP, Pinheiro RO, Sarno EN, Brito-de-Sousa JP, de Souza MLM, Fairley JK, Valente TNS, Velloso-Rodrigues C, Martins-Filho OA, de Oliveira DR, Fraga LAO.
28-04-2023
Front Immunol.
https://pubmed.ncbi.nlm.nih.gov/37187734/

IL-23/IL23R promote macrophage pyroptosis and Th1/Th17 cell differentiation in mycobacterial infection.

Wang C, Liu T, Wang Z, Li W, Zhao Q, Mi Z, Xue X, Shi P, Sun Y, Zhang Y, Wang N, Bao F, Chen W, Liu H, Zhang F.
13-05-2023
J Invest Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37187409/

Pathogen-induced epigenetic modifications can reshape anti-infection immune processes and control the magnitude of host responses. DNA methylation profiling has identified crucial aberrant methylation changes associated with diseases, thus providing biological insights

into the roles of epigenetic factors in mycobacterial infection. Here, we performed a genome-wide methylation analysis of skin biopsies from patients with leprosy and healthy controls. The Th17 differentiation pathway was found to be significantly associated with leprosy through functional enrichment analysis. As a key gene in this pathway, IL23R was found to be critical to mycobacterial immunity in leprosy, according to integrated analysis with DNA methylation, RNA sequencing and genome-wide association studies. Functional analysis revealed IL-23/IL23R enhanced bacterial clearance by activating caspase-1/GSDMD-mediated pyroptosis in a manner dependent on NLRP3 through STAT3 signaling in macrophages. Moreover, IL23/IL23R promoted Th1 and Th17 cell differentiation and proinflammatory cytokine secretion, thereby increasing host bactericidal activity. IL23R knockout attenuated the aforementioned effects and increased susceptibility to mycobacterial infection. These findings illustrate biological functions of IL-23/IL23R in modulating intracellular bacterial clearance in macrophages and further support their regulatory effects in Th cell differentiation. Our study highlights IL-23/IL23R might serve as potential targets for the prevention and treatment of leprosy and other mycobacterial infections.

Genotyping of Mycobacterium tuberculosis complex isolated from humans and animals in northeastern Iran.

Ghazvini K, Khoshbakht R, Tadayon K, Mosavari N, BahramiTaghanaki HR, Mohammadi GR, Rashti Baf M, Nourian K, Samiei A, Ghavidel M.
25-04-2023
Sci Rep.
https://pubmed.ncbi.nlm.nih.gov/37185604/

Treatment of Acquired Digital Arteriovenous Malformation With Intralesional Bleomycin: An Effective Modality for a Lesser Known Condition.

Khurana A, Mathachan SR, Paliwal P.
09-05-2023
Dermatol Surg.
https://pubmed.ncbi.nlm.nih.gov/37184505/

Photoaging: Reversal of the Oxidative Stress Through Dietary Changes and Plant-Based Products.

Hooda R, Madke B, Choudhary A.
09-04-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37182009/

Redox flagging represents all life processes, and maintaining a physiological level of antioxidants is essential for the legitimate working of the cell. Genetics and environmental triggers are two major culminating factors for skin aging, both chronological and photoaging. The latter, however, relies principally upon the level of ultraviolet radiation (UVR) exposure and the skin phototype. Apart from causing DNA damage, UVR also stimulates the receptors present in keratinocytes as well as fibroblasts. This in turn leads to the breakdown of collagen and a breach in the generation of new collagen. It is speculated that the breakdown of collagen in the dermis is ensured by the defective restoration that ultimately hampers the structural integrity of skin, leading to wrinkled and atrophic skin. The skin has an admixture of various endogenous antioxidants that work synergistically with vitamins and minerals to maintain cellular equilibrium. Although, their role in safeguarding the cells against the detrimental effects induced by UVR is still questionable and requires further research. However, the advancement in the biology of skin has led to the development of strategies that aim at skin rejuvenation and retarding the progression of photoaging and its visible signs. Photoaging in this article is reviewed in light of current concepts in pathogenesis and its prevention. In addition, the article focuses on both prevailing and forthcoming treatment strategies primarily through plant-based products that will help slow down the process of photoaging.

A Case Report of a Collodion Baby: An Autosomal Recessive Genodermatosis.

Quazi S, Singh A, Khan K, Biyani U.
11-04-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37181951/

Congenital ichthyosis refers to various underlying genodermatoses that indicate prenatal epidermal abnormalities. Collodion babies are manifestations of rare congenital ichthyosis, comprising severe clinical complications that contribute to the risk of mortality. This case report presents the case of a full-term female neonate, delivered at 38 weeks of gestation, who exhibited features of a translucent collodion membrane over her entire body at birth. The mother reported fewer antenatal check-ups and a lack of obstetric ultrasonography during pregnancy. The baby later developed systemic complications, which were managed with intensive neonatal care. This case report attempts to address the uncommon occurrence of collodion babies, which can be managed with supportive care and diagnosed with a fair amount of certainty with invasive prenatal diagnostics.

Editorial: Reviews in neglected tropical infectious diseases.

Ghorai S.
26-04-2023
Front Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37180224/

Importance of consultations using mobile teams in the screening and treatment of neglected tropical skin diseases in Benin.

Gnimavo RS, Fajloun F, Al-Bayssari C, Sodjinou E, Habib A, Ganlonon L, Claco E, Agoundoté I, Houngbo OA, Anagonou EG, Biaou CAO, Ayélo AG, Houezo JG,

Boccarossa A, Moussa EH, Gomez B, Gine A, Sopoh GE, Marion E, Johnson RC, Kempf M.
12-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37172044/

Context: Since 2013, the World Health Organization has recommended integrated control strategies for neglected tropical diseases (NTDs) with skin manifestations. We evaluated the implementation of an integrated approach to the early detection and rapid treatment of skin NTDs based on mobile clinics in the Ouémé and Plateau areas of Benin. Methods: This descriptive cross-sectional study was performed in Ouémé and Plateau in Benin from 2018 to 2020. Consultations using mobile teams were performed at various sites selected by reasoned choice based on the epidemiological data of the National Program for the Control of Leprosy and Buruli Ulcer. All individuals presenting with a dermatological lesion who voluntarily approached the multidisciplinary management team on the day of consultation were included. The information collected was kept strictly anonymous and was entered into an Excel 2013 spreadsheet and analyzed with Stata 11 software. Results: In total, 5,267 patients with various skin conditions consulted the medical team. The median age of these patients was 14 years (IQR: 7-34 years). We saw 646 (12.3%) patients presenting NTDs with skin manifestations, principally scabies, in 88.4% (571/646), followed by 37 cases of Buruli ulcer (5.8%), 22 cases of leprosy (3.4%), 15 cases of lymphatic filariasis (2.3%) and one case of mycetoma (0.2%). We detected no cases of yaws. Conclusion: This sustainable approach could help to decrease the burden of skin NTDs in resource-limited countries.

Obesity and Hidradenitis Suppurativa: Targeting meta-inflammation for therapeutic gain?

Mintoff D, Agius R, Benhadou F, Das A, Frew JW, Pace NP.
12-05-2023
Clin Exp Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37171791/

K.V. Desikan. An extraordinary life in the service of leprosy patients.

Pandya S.
Nov-Dec 2023
Natl Med J India.
https://pubmed.ncbi.nlm.nih.gov/37167519/

Improvement and characterization of oral absorption behavior of clofazimine by SNEDDS: Quantitative evaluation of extensive lymphatic transport.

Yamanouchi K, Ishimaru T, Kakuno T, Takemoto Y, Kawatsu S, Kondo K, Maruyama M, Higaki K.
Juin-2023
Eur J Pharm Biopharm.
https://pubmed.ncbi.nlm.nih.gov/37076052/

Clofazimine, an anti-leprosy drug, has been anticipated for a candidate to treat tuberculosis, cryptosporidiosis, and coronavirus infection, but its low oral bioavailability is considered a reason for its limited activity. In the current study, we have tried to improve the oral bioavailability of clofazimine by several SNEDDS formulations and characterized the absorption behavior from various aspects. Among four SNEDDS formulations prepared, SNEDDS A, prepared with castor oil as an oil component, provided the highest bioavailability (around 61%) and SNEDDS D, prepared with Capryol 90, gave the second highest bioavailability. SNEDDS A formed the finest nanoparticles, which were maintained under gastric and intestinal luminal conditions. The comparison in oral bioavailability between the SNEDDS formulation and its corresponding preformed nanoemulsion suggested that SNEDDS A would efficiently form nanoemulsion in the gastrointestinal tract after oral administration. AUC of mesenteric lymph node concentration was the highest for SNEDDS A, which would be one of the reasons for SNEDDS A to reveal the highest oral bioavailability. A cycloheximide-treated oral absorption study and single-pass perfusion study by utilizing a vascular-luminal perfused small intestine-liver preparation clearly indicated that over 90% of clofazimine absorbed to systemic circulation should be derived from lymphatic transport for both SNEDDS A and D. Furthermore, the fraction of dose absorbed was around 65% for SNEDDS D, but SNEDDS A achieved around 94%, indicating the excellent performance of SNEDDS A.

Histopathological analysis revealed that Mycobacterium abscessus proliferates in the fat bodies of silkworms.

Matsumoto Y, Fukano H, Katano H, Hoshino Y, Sugita T.
15-05-2023
Drug Discov Ther.
https://pubmed.ncbi.nlm.nih.gov/37045782/

Mycobacterium abscessus causes chronic skin infections, lung diseases, and systemic or disseminated infections. Although a silkworm infection model with M. abscessus has been established, pathological analysis of the infected silkworms has not been performed. In this study, we performed hematoxylin-eosin and Ziehl-Neelsen staining of silkworms infected with M. abscessus. Four days after infection with M. abscessus, M. abscessus accumulation was observed in the fat bodies of silkworms. The number of viable M. abscessus cells in the fat bodies of the infected silkworms increased over time. These results suggest that M. abscessus proliferates in the fat bodies of the infected silkworms.

Dermoscopy of Darier's disease in dark phototypes: An observational study by the International Dermoscopy Society task force on 'imaging in skin of colour'.

Errichetti E, Ankad BS, Lallas A, Chauhan P, Nayak M, Usatine RP, Bhat Y, Vinay K, Akay BN, Kelati A, Enechukwu NA, Ogunbiyi A, Behera B.
Juin-2023
J Eur Acad Dermatol Venereol.

https://pubmed.ncbi.nlm.nih.gov/36645849/

Morsures de serpent

Hemoglobin Casts in Kidney Biopsies: Etiological Spectrum.

Prema J, Kurien AA.
Jan-Fév 2023
Indian J Nephrol.
https://pubmed.ncbi.nlm.nih.gov/37197049/

Intravascular hemolysis, which is the destruction of red blood cells in circulation, can cause acute kidney injury as the hemoglobin released by the lysed cells is toxic to the tubular epithelial cells. We performed a retrospective analysis of 56 cases of hemoglobin cast nephropathy reported at our institution to analyze the etiological spectrum causing this rare disease. The mean patient age was 41.7 (range: 2-72 years), and the male-to-female ratio was 1.8:1. All patients presented with acute kidney injury. The etiologies include rifampicin-induced, snake bite, autoimmune hemolytic anemia, falciparum malarial infection, leptospiral infection, autoimmune hemolytic anemia, sepsis, non-steroidal anti-inflammatory drugs, ingestion of termite oil, heavy metal poisoning, wasp sting, and valvular heart disease with severe mitral regurgitation. We demonstrate a wide spectrum of conditions associated with hemoglobin casts in the kidney biopsy. Hemoglobin immunostain is required to establish the diagnosis.

Antibiotic susceptibility of cultivable microbiota from the oral cavity of captive Bothrops atrox and Bothrops lanceolatus: implications for the treatment of snakebite-associated infections in the French departments of America.

Larréché S, Bousquet A, da Silva L, Planelles A, Ksas R, Mérens A, Chippaux JP.
15-05-2023
Infect Dis Now.
https://pubmed.ncbi.nlm.nih.gov/37196810/

Two unusual cases of Guillain-Barre syndrome after snake bite: the rare immune mediated complication of Elapid venom.

Changadiya K, Anadure RK, Sreen A, Gupta S, Singh S, Mhatre R.
Mai-Juin 2023
Med J Armed Forces India.
https://pubmed.ncbi.nlm.nih.gov/37193514/

In this report, we present a series of two unusual cases of elapid snakebite with acute neuroparalysis, that after initial response to standard anti-snake venom therapy, developed recurrence of disabling quadriparesis with dysautonomia, that on detailed evaluation turned out to be immune-mediated polyradiculoneuropathy (GB syndrome). Both the cases then responded to therapy with intravenous immunoglobulins. These cases bring out the rare immune-mediated late complication of snake venom, which if recognized and treated in time, can significantly reduce the morbidity and mortality.

Snake bite - cytotoxic effects of snake venom: a rare clinical image.

Royte L, Sawarkar A.
01-02-2023
Pan Afr Med J.
https://pubmed.ncbi.nlm.nih.gov/37187594/

Medically important snakes and snakebite envenoming in Iran.

Dehghani R, Monzavi SM, Mehrpour O, Shirazi FM, Hassanian-Moghaddam H, Keyler DE, Wüster W, Westerström A, Warrell DA.
13-05-2023
Toxicon.
https://pubmed.ncbi.nlm.nih.gov/37187227/

Cytostatic and cytotoxic effects of a hot water and methanol extract of Acokanthera oppositifolia in HepG2 hepatocarcinoma cells.

Cordier W, Steenkamp P, Steenkamp V.
12-05-2023
J Ethnopharmacol.
https://pubmed.ncbi.nlm.nih.gov/37182674/

Ethnopharmacological relevance: Herb-induced liver injury is poorly described for African herbal remedies, such as Acokanthera oppositifolia. Although a commonly used treatment for pain, snake bites and anthrax, it is also a well-known arrow poison, thus toxicity is to be expected.

Aim of the study: The cytotoxicity and preliminary mechanisms of toxicity in HepG2 hepatocarcinoma cells were assessed. Materials and methods: The effect of hot water and methanol extracts were on cell density, oxidative status, mitochondrial membrane potential, fatty acids, caspase-3/7 activity, adenosine triphosphate levels, cell cycling and viability was assessed. Phytochemicals were tentatively identified using ultra-performance liquid chromatography. Results: The hot water extract displayed an IC_{50} of 24.26 µg/mL, and reduced proliferation (S- and G2/M-phase arrest) and viability (by 30.71%) as early as 24 h after incubation. The methanol extract had a comparable IC_{50} of 26.16 µg/mL, and arrested cells in the G2/M-phase (by 18.87%) and induced necrosis (by 13.21%). The hot water and methanol extracts depolarised the mitochondrial membrane (up to 0.84- and 0.74-fold), though did not generate reactive oxygen species. The hot water and methanol extracts decreased glutathione (0.42- and 0.62-fold) and adenosine triphosphate (0.08- and 0.26-fold) levels, while fatty acids (2.00- and 4.61-fold) and caspase-3/7 activity (1.98- and 5.82-fold) were increased. Conclusion: Extracts were both cytostatic and cytotoxic in HepG2 cells. Mitochondrial toxicity was evident and contributed to reducing adenosine triphosphate production and fatty acid accumulation. Altered redox status perturbed proliferation and promoted necrosis. Extracts of A. oppositifolia may thus promote necrotic cell

death, which poses a risk for inflammatory hepatotoxicity with associated steatosis.

Russell's viper venom: from diagnostic to bypassing agent for hemophilia?

Veizaj D, den Exter PL, Bos MHA.
Juin-2023
J Thromb Haemost.
https://pubmed.ncbi.nlm.nih.gov/37179074/

Approach to the diagnosis and management of snakebite envenomation in South Africa in humans.

05-05-2023
S Afr Med J.
https://pubmed.ncbi.nlm.nih.gov/37170609/

Snakebites occur in the community, not in the Emergency Unit. As such it is important to understand the first-aid concepts and pre-hospital emergency care aspects of this neglected disease. This article will highlight the concepts for emergency care within the context of the current pre-hospital arena and in light of the recent South African Snakebite Symposium consensus meeting held in July 2022, where wilderness rescue, emergency medical services and other medical participants agreed through evidence review and consensus debate on the current best approaches to care of the snakebite victim outside the hospital environment.

Introductory Editorial.

Hardcastle T.
05-05-2023
S Afr Med J.
https://pubmed.ncbi.nlm.nih.gov/37170599/

Epidemiology and clinical features of venomous snake bites in the Northern Amazon of Ecuador (2017-2021).

Calvopiña M, Guamán-Charco E, Ramírez K, Dávalos F, Chiliquinga P, Villa-Soxo S, Oña-Vistin R, Romero-Álvarez D.
30-03-2023
Biomedica.
https://pubmed.ncbi.nlm.nih.gov/37167468/

Introduction: In Ecuador, poisonous snakebites are a public health problem. However, there is no recent hospital information from the Amazon. Objective: To retrospectively analyse the clinical-epidemiological characteristics of snakebites in patients admitted to a hospital in the Ecuadorian Amazon. Materials and methods: This is a cross-sectional study conducted at the Nueva Loja-Sucumbíos Provincial Hospital, bordering Colombia (2017-2021). Demographic, epidemiological and clinical variables, and condition at hospital discharge, were obtained from the epidemiological file of the Ministerio de Salud Pública. Results: In 5 years, 147 patients (29.4 per year) were hospitalized with no mortality. They corresponded to 26, 34, 32, 29 and 26 cases, in 2017, 2018, 2019, 2020 and 2021, respectively. Men with 99 (67.3%), aged 21-30 years with 28, mixed race with 94 cases, students, and farmers, were the most affected. The most affected (99; 67.3%) were men, people 21 to 30 years-old (28; 19.0%), mestizos (94; 63.9%), students, and farmers. The median age was 28 (range: 4-81) years. Prevalence was higher in April, June, and September. All accidents were caused by Viperidae snakes. Twenty (13.6%) cases were mild, (61.2%) were moderate and 37 (25.2%) were severe. The feet with 45 were the most bitten. Pre-hospitalization anti-venom serum was received by 53.1% and tourniquet by 19.8% patients. Median hospital arrival time was 5 (range 1-192) hours, mostly between 2-3 hours with 41 cases. No statistically significant differences were found considering the severity. Conclusions: A high prevalence of snakebites was evidenced in the north of the Amazon in Ecuador, with a higher incidence in the rainy season and all by Viperidae species. It is important to highlight the null mortality. Information campaigns on prevention and first aid, such as discouraging the use of tourniquets, especially among vulnerable groups.

The genus Leucas: A review on phytochemistry and pharmacological activities.

Kumar S, Singh N, Mittal A, Kharkwal H, Jain SK, Goel B.
Juin-2023
Fitoterapia.
https://pubmed.ncbi.nlm.nih.gov/36996945/

Mycétome

"Dot in a Circle": a Useful Ultrasound Finding for a Rapid Diagnosis of Mycetoma.

Maione V, Cozzi C, Venturini M, Napolitano A, Calzavara-Pinton P.
01-04-2023
Dermatol Pract Concept.
https://pubmed.ncbi.nlm.nih.gov/37196273/

Positron emission tomography and computed tomography imaging in primary cutaneous nocardiosis with osteomyelitis clinically mimicking soft tissue sarcoma.

Okamoto M, Yamamoto T, Sugiyama S, Sunada M, Yamane M, Tanaka R, Endo H, Yaguchi T, Aoyama Y.
14-05-2023
J Dermatol.
https://pubmed.ncbi.nlm.nih.gov/37183522/

Importance of consultations using mobile teams in the screening and treatment of neglected tropical skin diseases in Benin.

Gnimavo RS, Fajloun F, Al-Bayssari C, Sodjinou E, Habib A, Ganlonon L, Claco E, Agoundoté I, Houngbo OA, Anagonou EG, Biaou CAO, Ayélo AG, Houezo JG, Boccarossa A, Moussa EH, Gomez B, Gine A, Sopoh GE, Marion E, Johnson RC, Kempf M.

12-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37172044/

Context: Since 2013, the World Health Organization has recommended integrated control strategies for neglected tropical diseases (NTDs) with skin manifestations. We evaluated the implementation of an integrated approach to the early detection and rapid treatment of skin NTDs based on mobile clinics in the Ouémé and Plateau areas of Benin. **Methods:** This descriptive cross-sectional study was performed in Ouémé and Plateau in Benin from 2018 to 2020. Consultations using mobile teams were performed at various sites selected by reasoned choice based on the epidemiological data of the National Program for the Control of Leprosy and Buruli Ulcer. All individuals presenting with a dermatological lesion who voluntarily approached the multidisciplinary management team on the day of consultation were included. The information collected was kept strictly anonymous and was entered into an Excel 2013 spreadsheet and analyzed with Stata 11 software. **Results:** In total, 5,267 patients with various skin conditions consulted the medical team. The median age of these patients was 14 years (IQR: 7-34 years). We saw 646 (12.3%) patients presenting NTDs with skin manifestations, principally scabies, in 88.4% (571/646), followed by 37 cases of Buruli ulcer (5.8%), 22 cases of leprosy (3.4%), 15 cases of lymphatic filariasis (2.3%) and one case of mycetoma (0.2%). We detected no cases of yaws. **Conclusion:** This sustainable approach could help to decrease the burden of skin NTDs in resource-limited countries.

Breaking the mold: a case of recalcitrant eyelid subconjunctival infection by Exophilia Phaeomuriformis.

Froines CP, Connor N, Li E, Yoda RA, Gonzalez-Cuyar LF, Lu GN, Fu R, Zhang M
Juin-2023
Orbit.
https://pubmed.ncbi.nlm.nih.gov/34694944/

Onchocercose

Burden and factors associated with onchocerciasis transmission among school-aged children after more than 20 years of Community Directed Treatment with Ivermectin in Ulanga district, Tanzania: A school-based cross-sectional study.

Mshana MI, Silvestri V, Mushi V, Bonaventura WM, Tarimo D, Ngasala B, Gasarasi DB.
12-05-2023
PLOS Glob Public Health.
https://pubmed.ncbi.nlm.nih.gov/37172010/

Onchocerciasis transmission in the Ulanga District of Morogoro-Tanzania is still ongoing despite more than 20 years of Community Directed Treatment with Ivermectin (CDTI) in the area. Even though surveys conducted over the years in the area have revealed a decrease in the prevalence of onchocerciasis, the prevalence of comorbidities suggested to be associated with this filarial infection, as epilepsy, is rising in endemic regions. This fact suggests continued transmission of Onchocerca volvulus and emphasizes the need for the evaluation of factors associated with it among school aged children. Therefore, this study determined the current burden of onchocerciasis in children aged 6 to 12 years and factors associated with continued transmission despite more than 20 years of CDTI in Ulanga District, Morogoro Region-Tanzania. A school-based cross-sectional study was conducted among 270 children aged 6 to 12 years in Ulanga District. Participants were tested using the OV-16 IgG4 Rapid Test. An interview-administered questionnaire was used to assess disease-associated symptoms, knowledge of onchocerciasis, and factors associated with continued transmission of the disease among participants. Descriptive statistics, chi-square test, and logistic regression were performed during data analysis. The prevalence of onchocerciasis was 19.6% (53/270), with boys being more infected; prevalence increased with increasing age groups and was higher in rural areas. Sex (AOR = 2.2, 95% CI: 1.13-4.28), age group of 11-12 years (AOR = 31.45, 95% CI: 2.73-362.27), and not taking ivermectin (AOR = 3.17, 95% CI: 1.53-6.58) were the only significant factors identified to be associated with the transmission of onchocerciasis in this study. The high prevalence of onchocerciasis among school age children in Ulanga district suggests continued transmission in the area. Therefore, a need to integrate CDTI with health education on the importance of ivermectin uptake.

Pian

Importance of consultations using mobile teams in the screening and treatment of neglected tropical skin diseases in Benin.

Gnimavo RS, Fajloun F, Al-Bayssari C, Sodjinou E, Habib A, Ganlonon L, Claco E, Agoundoté I, Houngbo OA, Anagonou EG, Biaou CAO, Ayélo AG, Houezo JG, Boccarossa A, Moussa EH, Gomez B, Gine A, Sopoh GE, Marion E, Johnson RC, Kempf M.
12-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37172044/

Context: Since 2013, the World Health Organization has recommended integrated control strategies for neglected tropical diseases (NTDs) with skin manifestations. We evaluated the implementation of an integrated approach to the early detection and rapid treatment of skin NTDs based on mobile clinics in the Ouémé and Plateau areas of Benin. **Methods:** This descriptive cross-sectional study was performed in Ouémé and Plateau in Benin from 2018 to 2020. Consultations using mobile teams were performed at various sites selected by reasoned choice based on the epidemiological data of the National Program for the Control of Leprosy and Buruli Ulcer. All individuals presenting with a dermatological lesion who voluntarily approached the multidisciplinary management team on the day of consultation were included. The information collected was kept strictly anonymous and was entered

into an Excel 2013 spreadsheet and analyzed with Stata 11 software. **Results:** In total, 5,267 patients with various skin conditions consulted the medical team. The median age of these patients was 14 years (IQR: 7-34 years). We saw 646 (12.3%) patients presenting NTDs with skin manifestations, principally scabies, in 88.4% (571/646), followed by 37 cases of Buruli ulcer (5.8%), 22 cases of leprosy (3.4%), 15 cases of lymphatic filariasis (2.3%) and one case of mycetoma (0.2%). We detected no cases of yaws. **Conclusion:** This sustainable approach could help to decrease the burden of skin NTDs in resource-limited countries.

Rage

Letter to the Editor regarding "Fatal Human Rabies Infection with Suspected Host-mediated Failure of Post-Exposure Prophylaxis Following a Recognized Zoonotic Exposure--Minnesota, 2021".

Willoughby RE.
18-05-2023
Clin Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37200494/

Trim25 restricts rabies virus replication by destabilizing phosphoprotein.

Yuan Y, Fang A, Wang Z, Tian B, Zhang Y, Sui B, Luo Z, Li Y, Zhou M, Chen H, Fu ZF, Zhao L.
29-09-2022
Cell Insight.
https://pubmed.ncbi.nlm.nih.gov/37193556/

Tripartite motif-containing protein 25 (Trim25) is an E3 ubiquitin ligase that activates retinoid acid-inducible gene I (RIG-I) and promotes the antiviral interferon response. Recent studies have shown that Trim25 can bind and degrade viral proteins, suggesting a different mechanism of Trim25 on its antiviral effects. In this study, Trim25 expression was upregulated in cells and mouse brains after rabies virus (RABV) infection. Moreover, expression of Trim25 limited RABV replication in cultured cells. Overexpression of Trim25 caused attenuated viral pathogenicity in a mouse model that was intramuscularly injected with RABV. Further experiments confirmed that Trim25 inhibited RABV replication via two different mechanisms: an E3 ubiquitin ligase-dependent mechanism and an E3 ubiquitin ligase-independent mechanism. Specifically, the CCD domain of Trim25 interacted with RABV phosphoprotein (RABV-P) at amino acid (AA) position at 72 and impaired the stability of RABV-P via complete autophagy. This study reveals a novel mechanism by which Trim25 restricts RABV replication by destabilizing RABV-P, which is independent of its E3 ubiquitin ligase activity.

RNA-Seq of untreated wastewater to assess COVID-19 and emerging and endemic viruses for public health surveillance.

Stockdale SR, Blanchard AA, Nayak A, Husain A, Nashine R, Dudani H, McClure CP, Tarr AW, Nag A, Meena E, Sinha V, Shrivastava SK, Hill C, Singer AC, Gomes RL, Acheampong E, Chidambaram SB, Bhatnagar T, Vetrivel U, Arora S, Kashyap RS, Monaghan TM.
Juil-2023
Lancet Reg Health Southeast Asia.
https://pubmed.ncbi.nlm.nih.gov/37193348/

Background: The COVID-19 pandemic showcased the power of genomic sequencing to tackle the emergence and spread of infectious diseases. However, metagenomic sequencing of total microbial RNAs in wastewater has the potential to assess multiple infectious diseases simultaneously and has yet to be explored. **Methods:** A retrospective RNA-Seq epidemiological survey of 140 untreated composite wastewater samples was performed across urban (n = 112) and rural (n = 28) areas of Nagpur, Central India. Composite wastewater samples were prepared by pooling 422 individual grab samples collected prospectively from sewer lines of urban municipality zones and open drains of rural areas from 3rd February to 3rd April 2021, during the second COVID-19 wave in India. Samples were pre-processed and total RNA was extracted prior to genomic sequencing. **Findings:** This is the first study that has utilised culture and/or probe-independent unbiased RNA-Seq to examine Indian wastewater samples. Our findings reveal the detection of zoonotic viruses including chikungunya, Jingmen tick and rabies viruses, which have not previously been reported in wastewater. SARS-CoV-2 was detectable in 83 locations (59%), with stark abundance variations observed between sampling sites. Hepatitis C virus was the most frequently detected infectious virus, identified in 113 locations and co-occurring 77 times with SARS-CoV-2; and both were more abundantly detected in rural areas than urban zones. Concurrent identification of segmented virus genomic fragments of influenza A virus, norovirus, and rotavirus was observed. Geographical differences were also observed for astrovirus, saffold virus, husavirus, and aichi virus that were more prevalent in urban samples, while the zoonotic viruses chikungunya and rabies, were more abundant in rural environments. **Interpretation:** RNA-Seq can effectively detect multiple infectious diseases simultaneously, facilitating geographical and epidemiological surveys of endemic viruses that could help direct healthcare interventions against emergent and pre-existent infectious diseases as well as cost-effectively and qualitatively characterising the health status of the population over time. **Funding:** UK Research and Innovation (UKRI) Global Challenges Research Fund (GCRF) grant number H54810, as supported by Research England.

Running throughout middle-age keeps old adult-born neurons wired.

Vivar C, Peterson B, Pinto A, Janke E, van Praag H.
Avr-2023
eNeuro.

https://pubmed.ncbi.nlm.nih.gov/37188520/

Exercise may prevent or delay aging-related memory loss and neurodegeneration. In rodents, running increases the number of adult-born neurons in the dentate gyrus (DG)

of the hippocampus, in association with improved synaptic plasticity and memory function. However, it is unclear whether adult-born neurons remain fully integrated into the hippocampal network during aging and whether long-term running affects their connectivity. To address this issue, we labeled proliferating DG neural progenitor cells with retrovirus expressing the avian TVA receptor in two-month-old sedentary and running male C57Bl/6 mice. More than six months later, we injected EnvA-pseudotyped rabies virus into the DG as a monosynaptic retrograde tracer, to selectively infect TVA expressing "old" new neurons. We identified and quantified the direct afferent inputs to these adult-born neurons within the hippocampus and (sub)cortical areas. Here, we show that long-term running substantially modifies the network of the neurons generated in young adult mice, upon middle-age. Exercise increases input from hippocampal interneurons onto "old" adult-born neurons, which may play a role in reducing aging-related hippocampal hyperexcitability. In addition, running prevents the loss of adult-born neuron innervation from perirhinal cortex, and increases input from subiculum and entorhinal cortex, brain areas that are essential for contextual and spatial memory. Thus, long-term running maintains the wiring of "old" new neurons, born during early adulthood, within a network that is important for memory function during aging.

Cost-effectiveness Analysis of Integrated Bite Case Management and Sustained Dog Vaccination for Rabies Control.

Taylor E, Prada JM, Del Rio Vilas V, Undurraga EA, Wallace R, Horton DL.
15-05-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/37188344/

SUCCESSFUL REVACCINATION OF A CHILD WITH GIANOTTI-CROSTI SYNDROME FOLLOWING DIPHTHERIA TETANUS AND RABIES VACCINATIONS.

Yuksel Bulut H, Arslan H, Ertugrul A, Oz FN, Ulusoy Severcan E, Bostanci I.
13-05-2023
J Allergy Clin Immunol Pract.
https://pubmed.ncbi.nlm.nih.gov/37187240/

Improved Transdermal Delivery of Rabies Vaccine using Iontophoresis Coupled Microneedle Approach.

Arshad MS, Hussain S, Zafar S, Rana SJ, Ahmad N, Jalil NA, Ahmad Z.
25-04-2023
Pharm Res.
https://pubmed.ncbi.nlm.nih.gov/37186072/

Aim: This study was aimed to develop rabies vaccine incorporated microneedle (MN) patches and evaluate the immunogenicity of prepared formulations in combination with iontophoresis. Methods: Patches comprising of polyvinyl pyrrolidone, hyaluronic acid and polyethylene glycol 400 were engineered by vacuum micromolding technique. Physical evaluation of patches included determination of folding endurance, % swelling and morphological features. In vitro release study was performed in skin simulant agarose gel using model drug (methylene blue) loaded patches. In vitro insertion ability was assessed using stratum corneum simulant parafilm. In vivo insertion study was performed in rats. Immunogenicity was evaluated in dogs by determining immunoglobulin G (IgG) and rabies virus neutralizing antibodies (RVNA) titer. Results: Patches displayed uniformly distributed microprojections with pointed tips and smooth surface, ~ 70% swelling, remained intact for ~ 200 foldings and successfully penetrated the parafilm. The area covered by model drug across agarose gel was almost double following treatment with MN-iontophoresis combination (MN_{di}) compared to MN alone (MN_{do}). Histological examination of rat skin treated with vaccine laden MN (MN_{vo}) and MN-iontophoresis combination (MN_{vi}) confirmed the formation of grooves in epidermis without any damage to the deep vasculature. A ~ 73% and ~ 206% increase (compared to untreated counterpart) was observed in the IgG titer of MN_{vo} and MN_{vi} treated dogs, respectively. The RVNA titer was increased by ~ 1.2 and ~ 2.2 times (compared to threshold value) after MN_{vo} and MN_{vi} treatment, respectively. Conclusion: MN-iontophoresis combination provided relatively potent immunogenic response over the conventional intramuscular injection, hence, can be used for administering vaccines transcutaneously.

Analysis of exotic pathogens found in a large group of imported dogs following an animal welfare investigation.

Wright I, Whitfield V, Hanaghan R, Upjohn M, Boyden P.
14-05-2023
Vet Rec.
https://pubmed.ncbi.nlm.nih.gov/37183184/

A Rare Presentation of Donkey Bites Involving the Cheek and Ear: A Case Report and Literature Review.

Zeaiter N, Maassarani D, Aoun CB, Ghanime G, Sleiman Z.
11-04-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/37182069/

Although animal bites account for a fair number of emergency department visits, donkey bites account for a very limited proportion. A 12-year-old boy presented to our department with a severe donkey bite involving his face. The injury included his left cheek with a laceration of the left ear cartilage. The examination revealed no serious morbidity (no vascular or nerve involvement). The patient received prophylactic antibiotics and anti-rabies/anti-tetanus vaccination. The wound was cleaned thoroughly with copious irrigation. Afterward, the patient underwent surgery to correct the defect in the cheek using a rotational advancement cervicofacial flap, while the penetrated ear cartilage was repaired and the skin margins were approximated and sutured. During the follow-up

period, no complications were observed and the functional and cosmetic outcomes were satisfactory. Donkey bites are rarely encountered and they can result in different presentations and morbidities/outcomes. It is suggested that the timing from the bite injury to presentation, the stage/extent of the bite, the use of anti-tetanus and anti-rabies vaccines, and the prophylactic use of antibiotics may play a role in determining the outcomes and/or complications of donkey bites.

Deoxynivalenol Mycotoxin Inhibits Rabies Virus Replication In Vitro.

Liu Q, He Q, Zhu W.
25-04-2023
Int J Mol Sci.
https://pubmed.ncbi.nlm.nih.gov/37175500/

A frantic confusion: beyond rabies and anti-N-methyl-D-aspartate encephalitis.

Cottu A, Kante A, Megherbi A, Lhomme S, Maisonneuve L, Santoli F.
12-05-2023
J Neurovirol.
https://pubmed.ncbi.nlm.nih.gov/37171751/

Schistosomiase

Rare presentation of gallbladder schistosomiasis: a case report.

Mahli Y, Aldamegh MS, Aljohani M.
Mai-2023
J Int Med Res.
https://pubmed.ncbi.nlm.nih.gov/37170560/

Schistosomiasis is a parasitic disease that is widely considered a neglected tropical disease. It is ranked first after malaria among all parasitic diseases. The major forms of schistosomiasis are intestinal and urogenital; however, gallbladder involvement is rare and usually accompanied by imaging findings similar to those of acute cholecystitis, such as wall thickening or pericholecystic inflammation. We encountered a patient who did not show these typical imaging findings. A man in his late 40s presented to the emergency department with a 2-month history of abdominal distention. His initial laboratory examination showed iron deficiency anemia. Computed tomography revealed a mildly distended gallbladder with septations and a small calcified gallstone. Magnetic resonance imaging was performed for better characterization, and it showed gallbladder stones with multiseptated, cystic gallbladder mural lesions and no wall thickening or pericholecystic fluid. On his second visit, the patient complained of mild epigastric pain. A provisional diagnosis of cholecystitis was considered, and laparoscopic cholecystectomy was performed. Histopathological evaluation revealed a gallbladder wall with multiple foci of chronic granulomatous inflammation. Schistosoma-like ova were observed in the mucosa and submucosa and were consistent with schistosomiasis. Periodic acid-Schiff staining of the ova was positive. The patient's postoperative course was uneventful.

School-based preventive chemotherapy program for schistosomiasis and soil-transmitted helminth control in Angola: 6-year impact assessment.

Bartlett AW, Mendes EP, Dahmash L, Palmeirim MS, de Almeida MC, Peliganga LB, Lufunda LMM, Direito A, Ramirez J, Mwinzi PN, Lopes S, Vaz Nery S.
17-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37196040/

The potential curative and hepatoprotective effects of platelet rich plasma on liver fibrosis in Schistosoma mansoni experimentally infected mice.

Bayoumi AMA, Ismail MAM, Mahmoud SS, Soliman ASA, Mousa AMA, Yousof HSA.
Juin-2023
J Parasit Dis.
https://pubmed.ncbi.nlm.nih.gov/37193508/

Can haematological changes constitute a surrogate diagnostic parameter to detect schistosomiasis in migrants and travellers? - A retrospective analysis.

Schnyder JL, Gobbi F, Schunk M, Lindner A, Salvador F, Duvignaud A, Arsuaga Vicente M, Dejon Agobé JC, Cattaneo P, Bertoli G, Rothe C, Wintel M, Pou D, Malvy D, Adegnika AA, De Jong HK, Grobusch MP.
27-04-2023
New Microbes New Infect.
https://pubmed.ncbi.nlm.nih.gov/37187799/

Background: Earlier studies found characteristic haematological changes in African patients with active schistosomiasis. If consistently present, full blood counts (FBC) may be helpful to diagnose schistosomiasis also in migrants and returning travellers. Methods: A retrospective patient record review was conducted on data from seven European travel clinics, comparing FBC of *Schistosoma* egg-positive travellers and migrants to reference values. Sub-analyses were performed for children, returned travellers, migrants and different *Schistosoma* species. Results: Data analysis included 382 subjects (median age 21.0 years [range 2-73]). In returned travellers, decreases in means of haemoglobin particularly in females (β = -0.82 g/dL, $p = 0.005$), MCV (β = -1.6 fL, $p = 0.009$), basophils, neutrophils, lymphocytes and monocytes (β = -0.07, $p < 0.001$; -0.57, $p = 0.012$; -0.57, $p < 0.001$ and -0.13 10^3/µL, $p < 0.001$, respectively) were observed. As expected, eosinophils were increased (β = +0.45 10^3/µL, $p < 0.001$). In migrants, a similar FBC profile was observed, yet thrombocytes and leukocytes were significantly lower in migrants (β = -48 10^3/µL $p < 0.001$ and β = -2.35 10^3/µL, $p < 0.001$, respectively). Conclusions: Active egg-producing *Schistosoma* infections are associated with haematological alterations in returned travellers and migrants. However, these differences are discrete and seem to vary among disease stage and *Schistosoma* species. Therefore, the FBC is unsuitable as a surrogate diagnostic parameter to detect schistosomiasis.

Vernonia britteniana Root Phytochemical Studies, In Vitro Cercaricidal Activity on the Larval Stage of Schistosoma mansoni and Antioxidant Activities.

Valente MDA, Ferreira P, Lima K, Moreira da Silva IB, Nobre P, Neto I, Pires M, Braz BS, Serrano R, Belo S, Silva O.
27-04-2023
Plants (Basel).
https://pubmed.ncbi.nlm.nih.gov/37176846/

Vernonia britteniana Hiern. (*Asteraceae*) is a medicinal plant used in traditional Angolan medicine against schistosomiasis. Our study aimed to investigate the phytochemical composition and the cercaricidal and antioxidant activities in vitro of a traditional herbal preparation (Water-Vbr) and a 70% hydroethanolic extract (EtOH70%-Vbr) prepared with this medicinal plant. The activity of the extracts against *Schistosoma mansoni* cercariae was assessed at different extract concentrations (500, 438, and 125 µg/mL) and at different time intervals, and the phytochemical profiles were obtained by LC-UV-ESI/MS-MS. In addition, the major chemical classes of the identified metabolites were quantified by colorimetry, and the antioxidant potential was assessed using the DPPH and FRAP methods. After 30 min, 100% cercarial mortality was observed at a concentration of 500 µg/mL after exposure, and after 120 min, an LC_{50} of 438 µg/mL was observed for both extracts. Phenolic acid derivatives (chlorogenic acid, caffeic acid; 3,4-di-*O*-caffeoylquinic acid; 3,5-di-*O*-caffeoylquinic acid; and 4,5-di-*O*-caffeoylquinic acid) and triterpenoids (stigmastane-type steroidal saponins; vernoamyoside D and vernonioside D1; vernoamyoside B; and vernoniamyoside A and C) were identified as the main secondary metabolites. The Water-Vbr extract showed the highest antioxidant activity-DPPH: IC_{50} = 1.769 ± 0.049 µg/mL; FRAP: mean = 320.80 ± 5.1325 µgAAE/g.

In Vitro Release and In Vivo Pharmacokinetics of Praziquantel Loaded in Different Polymer Particles.

Pereira ED, da Silva Dutra L, Paiva TF, de Almeida Carvalho LL, Rocha HVA, Pinto JC.
26-04-2023
Materials (Basel).
https://pubmed.ncbi.nlm.nih.gov/37176262/

DNA barcoding as a valuable tool for delimiting mollusk species of the genus Biomphalaria Preston, 1910 (Gastropoda: Planorbidae).

de Araújo AD, Carvalho ODS, Gava SG, Caldeira RL.
24-05-2023
Front Cell Infect Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37168391/

Introduction: The genus *Biomphalaria* in Brazil includes 11 species and one subspecies, three of which are intermediate hosts of *Schistosoma mansoni*. Due to the recent evolution of this group, some species are difficult to identify based on morphological characters, making the use of genetic markers necessary for species identification. This study aimed to evaluate the use of partial sequences of the cytochrome c oxidase I (*coi*) gene for the identification of *Biomphalaria* species using phylogenetic reconstruction and species delimitation algorithms. The study tested the use of DNA barcoding technique for species delimitation within the genus. Methods: DNA barcoding was performed by sequencing a partial region of the *coi* gene from specimens, and the sequences were analyzed using phylogenetic reconstruction and algorithms to delimit Operational Taxonomic Units (OTUs). Results: The study found that the use of the *coi* gene in the reconstruction of the phylogeny of the genus might be an alternative for understanding the evolution and dispersion of species. However, this marker alone is not enough to solve complex taxonomic problems within the genus. A total of 223 sequences were analyzed, 102 of which could be separated using the barcode gap, enabling the correct identification of seven taxa. Discussion: The study demonstrated that accurate mollusk identification is necessary for effective schistosomiasis control. The DNA barcoding methodology was found to be promising for accurate mollusk identification, which is crucial for concentrating schistosomiasis control efforts in places where it is needed.

Long non-coding RNAs are essential for Schistosoma mansoni pairing-dependent adult worm homeostasis and fertility.

Silveira GO, Coelho HS, Pereira ASA, Miyasato PA, Santos DW, Maciel LF, Olberg GGG, Tahira AC, Nakano E, Oliveira MLS, Amaral MS, Verjovski-Almeida S.
05-05-2023
PLoS Pathog.
https://pubmed.ncbi.nlm.nih.gov/37146077/

The trematode parasite Schistosoma mansoni causes schistosomiasis, which affects over 200 million people worldwide. Schistosomes are dioecious, with egg laying depending on the females' obligatory pairing with males. Long non-coding RNAs (lncRNAs) are transcripts longer than 200 nucleotides with low or no protein-coding potential that have been involved in other species with reproduction, stem cell maintenance, and drug resistance. In S. mansoni, we recently showed that the knockdown of one lncRNA affects the pairing status of these parasites. Here, we re-analyzed public RNA-Seq data from paired and unpaired adult male and female worms and their gonads, obtained from mixed-sex or single-sex cercariae infections, and found thousands of differentially expressed pairing-dependent lncRNAs among the 23 biological samples that were compared. The expression levels of selected lncRNAs were validated by RT-qPCR using an in vitro unpairing model. In addition, the in vitro silencing of three selected lncRNAs showed that knockdown of these pairing-dependent lncRNAs reduced cell proliferation in adult worms and their gonads, and are essential for female vitellaria maintenance, reproduction, and/or egg development. Remarkably, in vivo silencing of each of the three selected lncRNAs significantly reduced worm burden in infected mice by 26 to 35%. Whole mount in situ hybridization experiments showed that these pairing-

dependent lncRNAs are expressed in reproductive tissues. These results show that lncRNAs are key components intervening in S. mansoni adult worm homeostasis, which affects pairing status and survival in the mammalian host, thus presenting great potential as new therapeutic target candidates.

Enhancing the antischistosomal activity of carvacryl acetate using nanoemulsion.

de Souza RL, Mengarda AC, Roquini DB, Melo CO, de Morais MC, C Espírito-Santo MC, de Sousa DP, Moraes J, Oliveira EE.
Fév-2023
Nanomedicine (Lond).
https://pubmed.ncbi.nlm.nih.gov/37140262/

Aim: To formulate a carvacryl acetate nanoemulsion (CANE) and test its antischistosomal activity. Materials & methods: CANE was prepared and tested *in vitro* on *Schistosoma mansoni* adult worms and both human and animal cell lines. Next, CANE was administered orally to mice infected with either a prepatent infection or a patent infection of *S. mansoni*. Results: CANE was stable during 90 days of analysis. CANE showed *in vitro* anthelmintic activity, and no cytotoxic effects were observed. *In vivo*, CANE was more effective than the free compounds in reducing worm burden and egg production. Treatment with CANE was more effective for prepatent infections than praziquantel. Conclusion: CANE improves antiparasitic properties and may be a promising delivery system for schistosomiasis treatment.

Perspective on Schistosomiasis Drug Discovery: Highlights from a Schistosomiasis Drug Discovery Workshop at Wellcome Collection, London, September 2022.

Caldwell N, Afshar R, Baragaña B, Bustinduy AL, Caffrey CR, Collins JJ, Fusco D, Garba A, Gardner M, Gomes M, Hoffmann KF, Hsieh M, Lo NC, McNamara CW, Nono JK, Padalino G, Read KD, Roestenberg M, Spangenberg T, Specht S, Gilbert IH.
12-05-2023
ACS Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/37083395/

Proteases and their inhibitors involved in Schistosoma mansoni egg-host interaction revealed by comparative transcriptomics with Fasciola hepatica eggs.

Peterkova K, Vorel J, Ilgova J, Ostasov P, Fajtova P, Konecny L, Chanova M, Kasny M, Horn M, Dvorak J.
Mai-2023
Int J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/36754342/

Schistosoma mansoni eggs are the main causative agents of the pathological manifestations of schistosomiasis. The eggs are laid in the host bloodstream, then they migrate through the intestinal wall into the lumen. However, a significant proportion of the eggs become lodged in the liver, where they cause inflammation and fibrosis. In this study, we focus on a specific group of proteins expressed by the egg, namely proteases and their inhibitors. These molecules are often involved in schistosome-host interactions, but are still unexplored in the egg stage. Using RNA-seq and comparative transcriptomics of immature and mature S. mansoni eggs, we mapped the portfolio of proteases and their inhibitors, and determined their gene expression levels. In addition, we compared these data with gene expression of proteases and their inhibitors in Fasciola hepatica eggs. Fasciola hepatica eggs served as a useful comparative model, as they do not migrate through tissues and inflict pathology. We detected transcription of 135 and 117 proteases in S. mansoni and F. hepatica eggs, respectively, with 87 identified as orthologous between the two species. In contrast, we observed only four orthologous inhibitors out of 21 and 16 identified in S. mansoni and F. hepatica eggs, respectively. Among others, we measured high and developmentally regulated levels of expression of metalloproteases in S. mansoni eggs, specifically aminopeptidase N1, endothelin-converting enzyme 1, and several leishmanolysin-like peptidases. We identified highly transcribed protease inhibitors serpin and alpha-2-macroglobulin that are unique to S. mansoni eggs, and antistasin-like inhibitor in F. hepatica eggs. This study provides new insights into the portfolio of proteases and inhibitors expressed by S. mansoni with potential roles in egg tissue migration, stimulation of angiogenesis, and interaction with host blood and immunity.

Trachome

Conflict-climate-displacement: a cross-sectional ecological study determining the burden, risk and need for strategies for neglected tropical disease programmes in Africa.

Kelly-Hope LA, Harding-Esch EM, Willems J, Ahmed F, Sanders AM.
17-05-2023
BMJ Open.
https://pubmed.ncbi.nlm.nih.gov/37197807/

Objectives: Complex challenges such as political instability, climate change and population displacement are increasing threats to national disease control, elimination and eradication programmes. The objective of this study was to determine the burden and risk of conflict-related and climate-related internal displacements and the need for strategies for countries endemic with neglected tropical diseases (NTDs). Design, setting and outcome measures: A cross-sectional ecological study was conducted including countries that are endemic with at least one of five NTDs requiring preventive chemotherapy in the African region. For each country, the number of NTDs, population size and the number and rate per 100 000 of conflict-related and natural disaster-related internal displacements reported in 2021 were classified into high and low categories and used in unison to stratify and map the burden and risk. Results: This analysis identified 45 NTD-endemic countries; 8 countries were co-

endemic with 4 or 5 diseases and had populations classified as 'high' totalling >619 million people. We found 32 endemic countries had data on internal displacements related to conflict and disasters (n=16), disasters only (n=15) or conflict only (n=1). Six countries had both high conflict-related and disaster-related internal displacement numbers totalling >10.8 million people, and five countries had combined high conflict-related and disaster-related internal displacement rates, ranging from 770.8 to 7088.1 per 100 000 population. Weather-related hazards were the main cause of natural disaster-related displacements, predominately floods. Conclusions: This paper presents a risk stratified approach to better understand the potential impact of these complex intersecting challenges. We advocate for a 'call to action' to encourage national and international stakeholders to further develop, implement and evaluate strategies to better assess NTD endemicity, and deliver interventions, in areas at risk of, or experiencing, conflict and climate disasters, in order to help meet the national targets.

Meandered and muddled: a systematic review on the impact of air pollution on ocular health.

Muruganandam N, Mahalingam S, Narayanan R, Rajadurai E.
Mai-2023
Environ Sci Pollut Res Int.
https://pubmed.ncbi.nlm.nih.gov/37097565/

From the years 1970-2023, a systematic overview of the diverse consequences of particulate matter on eye health and a disease classification according to acute, chronic, and genetic are presented using the PubMed, Research Gate, Google Scholar, and Science Direct databases. Various studies on medical aspects correlate with the eye and health. However, from an application perspective, there is limited research on the ocular surface and air pollution. The main objective of the study is to uncover the relationship between eye health and air pollution, particularly particulate matter, along with other external factors acting as aggravators. The secondary goal of the work is to examine the existing models for mimicking human eyes. The study is followed by a questionnaire survey in a workshop, in which the exposure-based investigation was tagged based on their activity. This paper establishes a relationship between particulate matter and its influence on human health, leading to numerous eye diseases like dry eyes, conjunctivitis, myopia, glaucoma, and trachoma. The results of the questionnaire survey indicate that about 68% of the people working in the workshop are symptomatic with tears, blurred vision, and mood swings, while 32% of the people were asymptomatic. Although there are approaches for conducting experiments, the evaluation is not well defined; empirical and numerical solutions for particle deposition on the eye are needed. There prevails a broad gap in the arena of ocular deposition modeling.

Trématodoses d'origine alimentaire (clonorchiase, opisthorchiase, fasciolase et paragonimose)

Identification and prevalence of fluke infection in yak and Tibetan sheep around Qinghai Lake, China.

Fu Y, Zhang X, Li Z, Meng R, Duo H, Shen X, Ma Y, Guo Z.
19-05-2023
Parasitol Res.
https://pubmed.ncbi.nlm.nih.gov/37202562/

Molecular docking and dynamic simulations of quinoxaline 1,4-di-N-oxide as inhibitors for targets from Trypanosoma cruzi, Trichomonas vaginalis, and Fasciola hepatica.

González-González A, Méndez-Álvarez D, Vázquez-Jiménez LK, Delgado-Maldonado T, Ortiz-Pérez E, Paz-González AD, Bandyopadhyay D, Rivera G.
17-05-2023
J Mol Model.
https://pubmed.ncbi.nlm.nih.gov/37195391/

Context: Quinoxaline 1,4-di-N-oxide is a scaffold with a wide array of biological activities, particularly its use to develop new antiparasitic agents. Recently, these compounds have been described as trypanothione reductase (TR), triosephosphate isomerase (TIM), and cathepsin-L (CatL) inhibitors from Trypanosoma cruzi, Trichomonas vaginalis, and Fasciola hepatica, respectively. Methods: Therefore, the main objective of this work was to analyze quinoxaline 1,4-di-N-oxide derivatives of two databases (ZINC15 and PubChem) and literature by molecular docking, dynamic simulation and complemented by MMPBSA, and contact analysis of molecular dynamics' trajectory on the active site of the enzymes to know their potential effect inhibitory. Interestingly, compounds Lit_C777 and Zn_C38 show preference as potential TcTR inhibitors over HsGR, with favorable energy contributions from residues including Pro398 and Leu399 from Z-site, Glu467 from γ-Glu site, and His461, part of the catalytic triad. Compound Lit_C208 shows potential selective inhibition against TvTIM over HsTIM, with favorable energy contributions toward TvTIM catalytic dyad, but away from HsTIM catalytic dyad. Compound Lit_C388 was most stable in FhCatL with a higher calculated binding energy by MMPBSA analysis than HsCatL, though not interacting with catalytic dyad, holding favorable energy contribution from residues oriented at FhCatL catalytic dyad. Therefore, these kinds of compounds are good candidates to continue researching and confirming their activity through in vitro studies as new selective antiparasitic agents.

Gastrointestinal parasites of zoonotic importance detected in porcine faeces in Chitwan National Park, Nepal.

Subedi JR, Neupane S, Dhakal P.
Juin-2023
J Parasit Dis.

https://pubmed.ncbi.nlm.nih.gov/37193504/

Wild boar (*Sus scrofa)* is considered to be a potential source of zoonotic parasites. Wild boars are found at considerable number in and around the Chitwan National Park (CNP). The information regarding their intestinal parasites is limited. A cross-sectional study was carried out to determine the prevalence of gastrointestinal parasites in wild boars in CNP. A total of 100 fresh fecal samples were subjected to microscopic examination using direct smear, floatation and sedimentation method. Overall, 95% fecal samples were found positive for at least one parasite. Prevalence of protozoan parasites was found comparatively higher (70%) followed by nematode (56%) and trematode (12%). Nine gastrointestinal parasites such as *Eimeria* sp. (70% without micropyle and 40% with micopyle), *Fasciola* sp. (12%), *Strongyloides* sp. (56%), strongyle-type nematodes (49%), *Stephanurus* sp. (44%), *Globocephalus* sp. (38%), *Metastrongylus* sp. (12%), *Ascaris* sp. (7%) and *Trichuris* sp. (6%). were recorded. *Eimeria* sp. exhibited the highest prevalence while *Trichuris* had the least prevalence. This study has provided baseline information regarding the diversity of gastrointestinal parasites in wild boars. It requires continuous study at molecular level to explore other species of parasites and verify their zoonotic potential.

^{1}H NMR fecal metabolic phenotyping of periductal fibrosis- and cholangiocarcinoma-specific metabotypes defining perturbation in gut microbial-host co-metabolism.

Treeriya R, Ho PN, Titapun A, Klanrit P, Suksawat M, Kulthawatsiri T, Sirirattanakul S, Loilome W, Namwat N, Wangwiwatsin A, Chamadol N, Khuntikeo N, Phetcharaburanin J.
09-05-2023
PeerJ.
https://pubmed.ncbi.nlm.nih.gov/37187520/

Coproscopical diagnosis of patent Fasciola hepatica infections in sheep - A comparison between standard sedimentation, FLUKEFINDER® and a combination of both.

Kahl A, von Samson-Himmelstjerna G, Helm CS, Hodgkinson J, Williams D, Weiher W, Terhalle W, Steuber S, Krücken J.
10-05-2023
Vet Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37182357/

Molecular Characterization of the Interplay between Fasciola hepatica Juveniles and Laminin as a Mechanism to Adhere to and Break through the Host Intestinal Wall.

Serrat J, Torres-Valle M, López-García M, Becerro-Recio D, Siles-Lucas M, González-Miguel J.
03-05-2023
Int J Mol Sci.
https://pubmed.ncbi.nlm.nih.gov/37175870/

Updates on parasite infection prevalence in the Joseon period based on parasitological studies of human coprolites isolated from archaeological sites in the cities of Euijeongbu, Gumi, and Wonju.

Oh CS, Chai JY, Min S, Oh KT, Seol J, Song MK, Shin DH, Seo M.
Fév-2023
Parasites Hosts Dis.
https://pubmed.ncbi.nlm.nih.gov/37170469/

Parasite infection rates estimated by examining ancient coprolites can provide insights into parasitism in Joseon society. Using newly discovered Joseon period cases is essential to regularly update the parasite infection rates and reinforce the reliability of our previous estimations. In the present study, we investigated parasite infections in Joseon coprolites newly isolated from the cities of Euijeongbu, Gumi, and Wonju. We then updated the overall parasite infection rates of Joseon period samples (n= 30) as follows: 86.7% (26/30) for Trichuris trichiura, 56.7% (17/30) for Ascaris lumbricoides, 30.0% (9/30) for Clonorchis sinensis, and 30.0% (9/30) for Paragonimus westermani. The parasite infection rates in the Joseon society, estimated through coprolite examination, were very similar to those determined previously despite the addition of new cases to the existing data pool.

TLR3 activation by Clonorchis sinensis infection alleviates the fluke-induced liver fibrosis.

Wang Y, Gong P, Zhang X, Wang X, Zhang X, Zhang N, Yu Y, Ma Y, Zhang H, Zhang X, Li X, Li J.
11-05-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/37167198/

Clonorchis sinensis is a zoonotic parasite associated with liver fibrosis and cholangiocarcinoma development. The role of toll-like receptors (TLRs) in C. sinensis infection has not yet been fully elucidated. Here, the TLR3 signaling pathway, cytokine expression and liver fibrosis were examined in C. sinensis-infected wildtype (WT) and TLR3-/- mice. Polyinosinic-polycytidylic acid (Poly (I:C)) was used to treat C. sinensis infections. The results showed that TLR3 deficiency caused severe clonorchiasis with increased parasite burden, exacerbated proinflammatory cytokine expression and liver lesions, promoted the TGF-β1/Smad2/3 pathway and myofibroblast activation, exacerbated liver fibrosis (compared to WT mice). Poly (I:C) intervention increased the body weight, decreased mouse mortality and parasite burden, reduced liver inflammation, and alleviated C. sinensis-induced liver fibrosis. Furthermore, C. sinensis extracellular vesicles (CsEVs) promote the production of IL-6, TNF in WT biliary epithelial cells (BECs) via p38/ERK pathway, compared with control group, while TLR3 deletion induced much higher levels of IL-6 and TNF in TLR3-/- BECs than that in WT BECs. Taken together, TLR3 inhibit IL-6 and TNF production via p38/ERK signaling pathway, a phenomenon

that resulted in the alleviation of C. sinensis-induced liver fibrosis. Poly (I:C) is a potential treatment for clonorchiasis.

Proteases and their inhibitors involved in Schistosoma mansoni egg-host interaction revealed by comparative transcriptomics with Fasciola hepatica eggs.

Peterkova K, Vorel J, Ilgova J, Ostasov P, Fajtova P, Konecny L, Chanova M, Kasny M, Horn M, Dvorak J.
Mai-2023
Int J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/36754342/

Trypanosomes (trypanosomiase et maladie de Chagas)

Radial spoke protein 9 is necessary for axoneme assembly in Plasmodium but not in trypanosomatid parasites.

Ramakrishnan C, Fort C, Marques SR, Ferguson DJP, Gransagne M, Baum J, Chaouch S, Mouray E, Kohl L, Wheeler RJ, Sinden RE.
18-05-2023
J Cell Sci.
https://pubmed.ncbi.nlm.nih.gov/37199084/

Flagella are important for eukaryote cell motility, including in sperm, and are vital for life cycle progression of many unicellular eukaryotic pathogens. The "9+2" axoneme in most motile flagella comprises nine outer doublet and two central-pair singlet microtubules. T-shaped radial spokes protrude from the outer doublets towards the central pair and are necessary for effective beating. We asked if there were radial spoke adaptations associated with parasite lineage-specific properties in apicomplexans and trypanosomatids. Following an orthologue search for experimentally uncharacterised radial spoke proteins (RSPs), we identified and analysed RSP9. Trypanosoma brucei and Leishmania mexicana, have an extensive RSP complement including two divergent RSP9 orthologs, necessary for flagellar beating and swimming. Detailed structural analysis showed that neither ortholog is needed for axoneme assembly in Leishmania. In contrast, Plasmodium has a reduced set of RSPs including a single RSP9 ortholog. deletion of which in Plasmodium berghei leads to failure of axoneme formation, failed male gamete release, greatly reduced fertilisation and inefficient life cycle progression in the mosquito. This indicates contrasting selection pressures on axoneme complexity, likely linked with the different mode of assembly of trypanosomatid versus Plasmodium flagella.

tRNATyr has an unusually short half-life in Trypanosoma brucei.

Silveira d'Almeida G, Casius A, Henderson JC, Knuesel S, Aphasizhev R, Aphasizheva I, Manning AC, Lowe T, Alfonzo JD.
17-05-2023
RNA.
https://pubmed.ncbi.nlm.nih.gov/37197826/

Editorial: World Chagas disease day 2022.

Palmisano G, Yoshida N.
01-05-2023
Front Cell Infect Microbiol.
https://pubmed.ncbi.nlm.nih.gov/37197201/

Radio Immune Assay (RIA) Enabled Total Triiodothyronine (TT3) and Total Thyroxine (TT4) in Canine Trypanosomiasis: First Case Report from Maharashtra (India).

Salutgi P, Galdhar C, Sonigra R, Natu K, Mumbarkar N, Mathkar S, Dalvie A, Gaikwad R.
Jan-Mar 2023
Iran J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37197080/

Effects of SQ109 on Trichomonas vaginalis.

de Souza TG, Granado R, Benaim G, de Souza W, Benchimol M.
15-05-2023
Exp Parasitol.
https://pubmed.ncbi.nlm.nih.gov/37196704/

Trichomonas vaginalis is a protozoan that causes human trichomoniasis, a sexually transmitted infection (STI) that affects approximately 278 million people worldwide. The current treatment for human trichomoniasis is based on 1-(2-hydroxyethyl)-2-methyl-5-nitroimidazole, known as Metronidazole (MTZ). Although effective in eliminating parasitic infection, MTZ is related to serious adverse effects and is not recommended during pregnancy. In addition, some strains are resistant to 5'-nitroimidazoles, prompting the development of alternative drugs for trichomoniasis. Here we show that SQ109 [N-adamantan-2-yl-N'-((E)-3,7-dimethyl-octa- 2,6-dienyl)-ethane-1,2-diamine], a drug under development (antitubercular drug candidate that completed Phase IIb/III) for the treatment of tuberculosis, and previously tested in Trypanosoma cruzi and Leishmania. SQ109 inhibited T.vaginalis growth with an IC50 of 3.15 µM. We used scanning and transmission electron microscopy to visualize the ultrastructural alterations induced by SQ109. The microscopy analysis showed morphological changes on the protozoan surface, where the cells became rounded with increasing surface projections. In addition, the hydrogenosomes increased their size and area occupied in the cell. Furthermore, the volume and a significant association of glycogen particles with the organelle were seen to be altered. A bioinformatics search was done about the compound to find its possible targets and mechanisms of action. Our observations identify SQ109 as a promising compound against T. vaginalis in vitro, suggesting its potential utility as an alternative chemotherapy for trichomoniasis.

Molecular docking and dynamic simulations of quinoxaline 1,4-di-N-oxide as inhibitors for targets from

Trypanosoma cruzi, Trichomonas vaginalis, and Fasciola hepatica.

González-González A, Méndez-Álvarez D, Vázquez-Jiménez LK, Delgado-Maldonado T, Ortiz-Pérez E, Paz-González AD, Bandyopadhyay D, Rivera G.
17-05-2023
J Mol Model.
https://pubmed.ncbi.nlm.nih.gov/37195391/

Context: Quinoxaline 1,4-di-N-oxide is a scaffold with a wide array of biological activities, particularly its use to develop new antiparasitic agents. Recently, these compounds have been described as trypanothione reductase (TR), triosephosphate isomerase (TIM), and cathepsin-L (CatL) inhibitors from Trypanosoma cruzi, Trichomonas vaginalis, and Fasciola hepatica, respectively. Methods: Therefore, the main objective of this work was to analyze quinoxaline 1,4-di-N-oxide derivatives of two databases (ZINC15 and PubChem) and literature by molecular docking, dynamic simulation and complemented by MMPBSA, and contact analysis of molecular dynamics' trajectory on the active site of the enzymes to know their potential effect inhibitory. Interestingly, compounds Lit_C777 and Zn_C38 show preference as potential TcTR inhibitors over HsGR, with favorable energy contributions from residues including Pro398 and Leu399 from Z-site, Glu467 from γ-Glu site, and His461, part of the catalytic triad. Compound Lit_C208 shows potential selective inhibition against TvTIM over HsTIM, with favorable energy contributions toward TvTIM catalytic dyad, but away from HsTIM catalytic dyad. Compound Lit_C388 was most stable in FhCatL with a higher calculated binding energy by MMPBSA analysis than HsCatL, though not interacting with catalytic dyad, holding favorable energy contribution from residues oriented at FhCatL catalytic dyad. Therefore, these kinds of compounds are good candidates to continue researching and confirming their activity through in vitro studies as new selective antiparasitic agents.

Near-infrared imaging for automated tsetse pupae sex sorting in support of the sterile insect technique.

Argilés-Herrero R, Salvador-Herranz G, Parker AG, Zacarés M, Fall AG, Gaye AM, Nawaz A, Takáč P, Vreysen MJB, de Beer CJ.
2023
Parasite.
https://pubmed.ncbi.nlm.nih.gov/37195141/

Histology and histochemistry of the accessory gland of the female reproductive tract of Rhodnius neglectus Lent, 1954 (Hemiptera: Reduviidae).

Gomes DS, Oliveira CJF, Costa TMC, Rueda AP, Zanuncio JC, Serrão JE, Souza EA.
15-05-2023
Braz J Biol.
https://pubmed.ncbi.nlm.nih.gov/37194827/

Knockout of protein phosphatase 1 in Leishmania major reveals its role during RNA polymerase II transcription termination.

Kieft R, Zhang Y, Yan H, Schmitz RJ, Sabatini R.
17-05-2023
Nucleic Acids Res.
https://pubmed.ncbi.nlm.nih.gov/37194692/

The genomes of kinetoplastids are organized into polycistronic transcription units that are flanked by a modified DNA base (base J, beta-D-glucosyl-hydroxymethyluracil). Previous work established a role of base J in promoting RNA polymerase II (Pol II) termination in Leishmania major and Trypanosoma brucei. We recently identified a PJW/PP1 complex in Leishmania containing a J-binding protein (JBP3), PP1 phosphatase 1, PP1 interactive-regulatory protein (PNUTS) and Wdr82. Analyses suggested the complex regulates transcription termination by recruitment to termination sites via JBP3-base J interactions and dephosphorylation of proteins, including Pol II, by PP1. However, we never addressed the role of PP1, the sole catalytic component, in Pol II transcription termination. We now demonstrate that deletion of the PP1 component of the PJW/PP1 complex in L. major, PP1-8e, leads to readthrough transcription at the 3'-end of polycistronic gene arrays. We show PP1-8e has in vitro phosphatase activity that is lost upon mutation of a key catalytic residue and associates with PNUTS via the conserved RVxF motif. Additionally, purified PJW complex with associated PP1-8e, but not complex lacking PP1-8e, led to dephosphorylation of Pol II, suggesting a direct role of PNUTS/PP1 holoenzymes in regulating transcription termination via dephosphorylating Pol II in the nucleus.

Antimicrobial Peptides (AMPs): Potential Therapeutic Strategy against Trypanosomiases?

Rojas-Pirela M, Kemmerling U, Quiñones W, Michels PAM, Rojas V.
26-03-2023
Biomolecules.
https://pubmed.ncbi.nlm.nih.gov/37189347/

Circular mitochondrial-encoded mRNAs are a distinct subpopulation of mitochondrial mRNA in Trypanosoma brucei.

Smoniewski CM, Mirzavand Borujeni P, Petersen A, Hampton M, Salavati R, Zimmer SL.
15-05-2023
Sci Rep.
https://pubmed.ncbi.nlm.nih.gov/37188727/

Immunization with a Trypanosoma cruzi cyclophilin-19 deletion mutant protects against acute Chagas disease in mice.

Jha BK, Varikuti S, Verma C, Shivahare R, Bishop N, Dos Santos GP, McDonald J, Sur A, Myler PJ, Schenkman S, Satoskar AR, McGwire BS.
25-04-2023
NPJ Vaccines.
https://pubmed.ncbi.nlm.nih.gov/37185599/

Human infection with the protozoan parasite Trypanosoma cruzi causes Chagas disease for which there are no prophylactic vaccines. Cyclophilin 19 is a secreted cis-trans peptidyl isomerase expressed in all life stages of Trypanosoma cruzi. This protein in the insect stage leads to the inactivation of insect anti-parasitic peptides and parasite transformation whereas in the intracellular amastigotes it participates in generating ROS promoting the growth of parasites. We have generated a parasite mutant with depleted expression of Cyp19 by removal of 2 of 3 genes encoding this protein using double allelic homologous recombination. The mutant parasite line failed to replicate when inoculated into host cells in vitro or in mice indicating that Cyp19 is critical for infectivity. The mutant parasite line also fails to replicate in or cause clinical disease in immuno-deficient mice further validating their lack of virulence. Repeated inoculation of mutant parasites into immuno-competent mice elicits parasite-specific trypanolytic antibodies and a Th-1 biased immune response and challenge of mutant immunized mice with virulent wild-type parasites is 100% effective at preventing death from acute disease. These results suggest that parasite Cyp19 may be candidate for small molecule drug targeting and that the mutant parasite line may warrant further immunization studies for prevention of Chagas disease.

High Trypanosoma cruzi prevalence in armadillo (Zaedyus pichiy; Xenarthra: Chlamyphoridae) populations from Mendoza, Argentina.

Morales ME, Campo Verde Arbocco F, Muñoz-San Martín C, Abba AM, Ríos TA, Cassini GH, Cattan PE, Jahn GA, Superina M.
15-05-2023
Parasitol Res.
https://pubmed.ncbi.nlm.nih.gov/37184599/

Non-histone protein methylation in Trypanosoma cruzi epimastigotes.

de Almeida RF, Lucena ACR, Batista M, Marchini FK, de Godoy LMF.
14-05-2023
Proteomics.
https://pubmed.ncbi.nlm.nih.gov/37183273/

Post-translational methylation of proteins, which occurs in arginines and lysines, modulates several biological processes at different levels of cell signaling. Recently, methylation has been demonstrated in the regulation beyond histones, for example, in the dynamics of protein-protein and protein-nucleic acid interactions. However, the presence and role of non-histone methylation in Trypanosoma cruzi, the etiologic agent of Chagas disease, has not yet been elucidated. Here, we applied mass spectrometry-based-proteomics (LC-MS/MS) to profile the methylproteome of T. cruzi epimastigotes, describing a total of 1252 methyl sites in 824 proteins. Functional enrichment and protein-protein interaction analysis show that protein methylation impacts important biological processes of the parasite, such as translation, RNA and DNA binding, amino acid, and carbohydrate metabolism. In addition, 171 of the methylated proteins were previously reported to bear phosphorylation sites in T. cruzi, including flagellar proteins and RNA binding proteins, indicating that there may be an interplay between these different modifications in non-histone proteins. Our results show that a broad spectrum of functions is affected by methylation in T. cruzi, indicating its potential to impact important processes in the biology of the parasite and other trypanosomes.

Impact of the Recognition Part of Dipeptidyl Nitroalkene Compounds on the Inhibition Mechanism of Cysteine Proteases Cruzain and Cathepsin L.

Arafet K, Royo S, Schirmeister T, Barthels F, González FV, Moliner V.
24-04-2023
ACS Catal.
https://pubmed.ncbi.nlm.nih.gov/37180968/

Cysteine proteases (CPs) are an important class of enzymes, many of which are responsible for several human diseases. For instance, cruzain of protozoan parasite *Trypanosoma cruzi* is responsible for the Chagas disease, while the role of human cathepsin L is associated with some cancers or is a potential target for the treatment of COVID-19. However, despite paramount work carried out during the past years, the compounds that have been proposed so far show limited inhibitory action against these enzymes. We present a study of proposed covalent inhibitors of these two CPs, cruzain and cathepsin L, based on the design, synthesis, kinetic measurements, and QM/MM computational simulations on dipeptidyl nitroalkene compounds. The experimentally determined inhibition data, together with the analysis and the predicted inhibition constants derived from the free energy landscape of the full inhibition process, allowed describing the impact of the recognition part of these compounds and, in particular, the modifications on the P2 site. The designed compounds and, in particular, the one with a bulky group (Trp) at the P2 site show promising *in vitro* inhibition activities against cruzain and cathepsin L for use as a starting lead compound in the development of drugs with medical applications for the treatment of human diseases and future designs.

The Antileishmanial Activity of Eugenol Associated with Lipid Storage Reduction Rather Than Membrane Properties Alterations.

Hughes K, Le TB, Van Der Smissen P, Tyteca D, Mingeot-Leclercq MP, Quetin-Leclercq J.
04-05-2023
Molecules.
https://pubmed.ncbi.nlm.nih.gov/37175277/

Ulcère de Buruli

Importance of consultations using mobile teams in the screening and treatment of neglected tropical skin diseases in Benin.

Gnimavo RS, Fajloun F, Al-Bayssari C, Sodjinou E, Habib A, Ganlonon L, Claco E, Agoundoté I, Houngbo OA, Anagonou EG, Biaou CAO, Ayélo AG, Houezo JG, Boccarossa A, Moussa EH, Gomez B, Gine A, Sopoh GE, Marion E, Johnson RC, Kempf M.

12-05-2023

PLoS Negl Trop Dis.

https://pubmed.ncbi.nlm.nih.gov/37172044/

Context: Since 2013, the World Health Organization has recommended integrated control strategies for neglected tropical diseases (NTDs) with skin manifestations. We evaluated the implementation of an integrated approach to the early detection and rapid treatment of skin NTDs based on mobile clinics in the Ouémé and Plateau areas of Benin. Methods: This descriptive cross-sectional study was performed in Ouémé and Plateau in Benin from 2018 to 2020. Consultations using mobile teams were performed at various sites selected by reasoned choice based on the epidemiological data of the National Program for the Control of Leprosy and Buruli Ulcer. All individuals presenting with a dermatological lesion who voluntarily approached the multidisciplinary management team on the day of consultation were included. The information collected was kept strictly anonymous and was entered into an Excel 2013 spreadsheet and analyzed with Stata 11 software. Results: In total, 5,267 patients with various skin conditions consulted the medical team. The median age of these patients was 14 years (IQR: 7-34 years). We saw 646 (12.3%) patients presenting NTDs with skin manifestations, principally scabies, in 88.4% (571/646), followed by 37 cases of Buruli ulcer (5.8%), 22 cases of leprosy (3.4%), 15 cases of lymphatic filariasis (2.3%) and one case of mycetoma (0.2%). We detected no cases of yaws. Conclusion: This sustainable approach could help to decrease the burden of skin NTDs in resource-limited countries.