Réseau MTN Francophone

Veille scientifique
Maladies tropicales négligées

Semaine 06
06 au 12 février 2023

Dengue, chikungunya et maladie à virus Zika

Enteric fever masquerading as Crohn's disease in a child with abdominal tuberculosis.

Sahoo B, Kumar K, Malhotra S, Sibal A.
09-02-2023
BMJ Case Rep.
https://pubmed.ncbi.nlm.nih.gov/36759044/

Vector-Borne and Zoonotic Diseases in the Eastern Mediterranean Region: A Systematic Review.

Fazaludeen Koya S, Abdalla SM, Kodama C, Keita M, Abubakar A.
09-02-2023
J Epidemiol Glob Health.
https://pubmed.ncbi.nlm.nih.gov/36757670/

Background and objective: World Health Organization Eastern Mediterranean Region (WHO EMR) has 40% people in the world in need of humanitarian assistance. This systematic review explores selected vector-borne and zoonotic diseases (VBZDs) of importance to EMR in terms of disease burden across countries and periods, disaggregated across sex, age groups, education levels, income status, and rural/urban areas, related vector or animal source reduction measures, and public health, social and economic impacts and related interventions. Methods: We used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and reviewed articles in PubMed, Embase, and WHO Global Index Medicus published between 1st of January 2011 and 27th of June 2022. Thirteen VBZDs with at least one reported outbreak in the last five years in the region or prioritized as per previous analysis at the WHO global and regional level and based on expert consultations, were included as part of the analysis. Results: The review included 295 studies-55% on leishmaniasis and dengue combined, and 75% studies from Pakistan, Kingdom of Saudi Arabia, and Iran combined. Hospital-based and nationally representative studies constituted 60% and 10% respectively. Males were predominantly affected in most diseases; children reported high burden of Leishmaniasis, whereas elderly had a higher burden of Dengue Fever and Middle East Respiratory Syndrome. Although very few studies reported on socioeconomic differences in burden, the ones that reported showed higher burden of diseases among the disadvantaged socioeconomic groups such as the poor and the less educated. More than 80% studies reported an increase in burden over the years. Conclusion: The literature is scanty for most of the diseases reviewed and the number of studies from countries with humanitarian challenges is very low. The need for more nationally representative, population-based studies calls for prioritizing research investments.

Development and Validation of a Bedside Dengue Severity Score for Predicting Severe Dengue in Children.

Gayathri V, Lakshmi SV, Murugan SS, Poovazhagi V, Kalpana S.
09-02-2023
Indian Pediatr.
https://pubmed.ncbi.nlm.nih.gov/36757000/

Rapid Appraisals of the Transformation Strategy Required to Sustain Dengue Vector Control During and After the COVID-19 Pandemic in Indonesia.

Sulistyawati S, Yuliansyah H, Sukesi TW, Khusna AN, Mulasari SA, Tentama F, Sudarsono B, Ghozali FA.
02-02-2023
Risk Manag Healthc Policy.
https://pubmed.ncbi.nlm.nih.gov/36755750/

Purpose: This research aimed to observe the gap for improvement in dengue vector control during COVID-19, considering two stakeholders: the government and society. We formulated two research questions: 1) How is the government managing dengue vector control during the COVID-19 pandemic? 2) What is the situation of dengue disease, its vectors, and vector control in the community? Methods: This study uses multiple approaches: policy review, social listening using Twitter analysis, and interviews. A policy review was employed to capture the journey of dengue vector control in Indonesia from dengue found in Indonesia until the COVID-19 pandemic. Twitter data captured public opinions through social media about dengue and vector control. Interviews involved program implementers that consider knowing the situation in the field of dengue and its vector control. The informant was selected through purposive sampling. Results: To control dengue disease, the Indonesian government has released regulations about dengue vector control that adjusts the COVID-19 situation, but vector control is still not running optimally, resulting in the data supply for policy not running well.

Conclusion: Dengue cases continued during the COVID-19 pandemic, even in some places stated an outbreak occurred. Vector control does not work correctly during the COVID-19 pandemic due to social restrictions. It is recommended to encourage the implementation of community empowerment through one house, one jumantik, which is equipped with self-reporting to mitigate and respond to similar situations as the pandemic.

Cross reactivity of SARS-CoV-2 with other pathogens, especially dengue virus: A historical perspective.

Dutta D, Ghosh A, Dutta C, Sukla S, Biswas S.
08-02-2023
J Med Virol.
https://pubmed.ncbi.nlm.nih.gov/36755367/

Dengue is a vector-borne viral disease caused by a Flavivirus whereas the COVID-19 pandemic was caused by a highly contagious virus, SARS-CoV-2 belonging to the family Coronaviridae. However, COVID-19 severity was

observably less in dengue-endemic countries and vice versa especially during the active years of the pandemic (2019-2021). We observed that dengue virus (DENV) antibodies (Abs) could cross-react with SARS-CoV-2 spike antigen. This resulted in SARS-CoV-2 false positivity by rapid Ab test kits. DENV Abs binding to SARS-CoV-2 receptor-binding domain (and the reverse scenario), as revealed by docking studies further validated DENV and SARS-CoV-2 cross-reactivity. Finally, SARS-CoV-2 Abs were found to cross-neutralize DENV1 and DENV2 in virus neutralization test (VNT). Abs to other pathogens like Plasmodium were also cross-reactive but non-neutralizing for SARS-CoV-2. Here, we analyze the existing data on SARS-CoV-2 cross-reactivity with other pathogens, especially dengue to assess its impact on health (cross-protection?) and differential sero-diagnosis/surveillance.

The Dengue virus protease NS2B3 cleaves cyclic GMP-AMP synthase (cGAS) to suppress cGAS activation.

Bhattacharya M, Bhowmik D, Tian Y, He H, Zhu F, Yin Q.
06-02-2023
J Biol Chem.
https://pubmed.ncbi.nlm.nih.gov/36754281/

Why is Nicotiana tabacum leaf extract more effective than Piper betle leaf extract on mortality of Aedes aegypty larvae ?

Destrianto PD, Wardani DPK, Hikmawati I, Mujahid I.
06-02-2023
Exp Parasitol.
https://pubmed.ncbi.nlm.nih.gov/36754195/

The control of the dengue vector is an important step in preventing dengue fever. The use of synthetic pesticides has been proven to cause environmental pollution, death of various living things and resistance. Therefore, research on innovative vegetable insecticides such as nicotiana tabacum leaf extract and piper betel leaf extract is urgently needed. This true experimental research to compare the effectiveness of nicotiana tabacum leaf extract and piper betle leaf extract on the Aedes aegypti larva using a post-test only design with a controlled-group design. The nicotiana tabacum leaf and piper betle leaf were extracted with 96% ethanol to be tested on the 600 third instar larvae. Then, the test was done with three concentrations of nicotiana tabacum leaf extract and piper betel leaf extract, including 0.1%, 0.2%, and 0.4%, with three repetitions in each concentration. The most effective concentration and time of nicotiana tabacum leaf extract and piper betel leaf extract on the larvae mortality were analyzed using the Freadman test as the alternative test since the data were not normally distributed. LC_{50} and LC_{90} of nicotiana tabacum leaf extract and piper betel leaf extract were tested using probit analysis. The results showed that the treatments of nicotiana tabacum leaf extract and piper betel leaf extract affected larvas mortality. The average mortality of larvae in nicotiana tabacum leaf extract was at concentrations of 0.1% (6 larvae), 0.2% (12 larvae), 0.4% (24 larvae) and occurred after 1 h exposure, whereas in piper betle leaf extract, only occurred after 4 h of exposure, with an average death ratio at a concentration of 0.1% in nicotiana tabacum leaf extract (29.33 larvae) and piper betle leaf extract (1.33 larvae). The results of the Probit analysis of nicotiana tabacum leaf extract and piper betle leaf extract at 8 h of exposure obtained LC50 results of 1.2% nicotiana tabacum leaf extract and 9.036% piper betle leaf extract. The LC90 yield of nicotiana tabacum leaf extract was 3.086% and piper betle leaf extract was 14.81%. The results of this study indicated that there were differences in the mortality rates of the two extracts, and that nicotiana tabacum leaf extract had a higher mortality rate than piper betle leaf extract. LC50 and LC90 of piper betle leaf extract had lower values than nicotiana tabacum leaf extract. Piper betle leaf extract requires a higher extract concentration to kill 50% and 90% of test larvae compared to nicotiana tabacum leaf extract.

Genomic and phenotypic analyses suggest moderate fitness differences among Zika virus lineages.

Oliveira G, Vogels CBF, Zolfaghari A, Saraf S, Klitting R, Weger-Lucarelli J, P Leon K, Ontiveros CO, Agarwal R, Tsetsarkin KA, Harris E, Ebel GD, Wohl S, Grubaugh ND, Andersen KG.
08-02-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/36753510/

[Dengue during pregnancy, less incidence of thrombocytopenia than in general population].

Gutiérrez-Aguirre CH, Palomares-Leal A, Soto-Flores L, Colunga-Pedraza P, Jaime-Pérez JC, Zambrano-Velarde M, Vega-Cortes D, Flores-Jiménez JA, Gómez-Almaguer D.
03-02-2023
Rev Salud Publica (Bogota)
https://pubmed.ncbi.nlm.nih.gov/36753207/

Objective: Dengue is a generally self-limited viral disease, considered a public health problem in Mexico. It can be accompanied by laboratory alterations such as neutropenia, lymphopenia and thrombocytopenia. The objective of the study was to evaluate the incidence of hematological alterations in patients with dengue. Methods: We retrospectively included 64 patients, including 14 pregnant women, with a diagnosis of dengue at the Hospital Universitario de Monterrey and Civil Nuevo de Guadalajara from January 2014 to December 2017. Results: The most common clinical symptom in the general group was headache and retro-ocular pain in 53 patients (83%), while in pregnant patients it was fever in 12 patients (86%). The median platelet count in the general group was 51.4x103/ µ!, with thrombocytopenia in 88% of patients, while in pregnant patients it was 141.1 x103/ with thrombocytopenia in 57% of patients (p=0.002). Platelet recovery was achieved in 7 days in the general group and 4.5 days in pregnant patients. Conclusions: Contrary to that reported in the literature, pregnant patients had a lower incidence of thrombocytopenia and a

higher platelet count at time of diagnosis without impact on maternal mortality or in the course of pregnancy.

[Epidemiological surveillance system for the acute febrile syndrome in Villeta, Colombia].

Yaya-Lancheros N, Polo-Terán LJ, Faccini-Martínez ÁA, Hidalgo-Díaz M.
03-02-2023
Rev Salud Publica (Bogota).
https://pubmed.ncbi.nlm.nih.gov/36753179/

[Barriers and negative behaviors that prevail in the prevention and control of dengue in Cartagena, Colombia].

Pasos-Simancas ES, Archibold-Suárez R.
03-02-2023
Rev Salud Publica (Bogota).
https://pubmed.ncbi.nlm.nih.gov/36753146/

Objective: To investigate the negative risk barriers for the prevention and control of dengue that prevail in the population and in the institutional and sectoral responsible of the city of Cartagena. Materials and methods: A qualitative, narrative-ethnographic design approach supported by the COMBI methodology was used. The population was 90 people residing in the three localities belonging to the District of Cartagena de Indias (Colombia) and registered in the Administrative Department of District Health (hereinafter DADIS), specifically in the National System of Public Health Surveillance (Sivigilia), with high incidences or probabilities of suspected cases of dengue fever and cases of dengue.

Results: People reside in houses made of cardboard, wood, zinc, block, cement, eternity shelters. Although they are aware of the problem of dengue, they relate it to other diseases such as the cold and the flu. They give more importance to other social problems, such as violence and insecurity in the area. The educational and preventive messages in the press, radio and television made by DADIS and other dengue control entities do not cover all the measures that must be implemented for the prevention and control of the disease. Conclusion: The transmission of dengue can be related to socio-economic factors such as: little knowledge the com-munity has about the health consequences that Dengue transmission can cause; the attitude and practices indifferent to this pathology, as well as the insufficient educational and preventive communication carried out by DADIS through communication channels and social networks, among others.

Informing COVID-19 Response and Health Equity Agenda: Collection of Public Health Reports Articles on Emerging Viral Epidemics in the United States, 1878-2021.

Harada NM, Kuzmichev A, Dembek ZF, Ising AI, Dean HD.
08-02-2023
Public Health Rep.
https://pubmed.ncbi.nlm.nih.gov/36752215/

In silico design of a multi-epitope Chimera from Aedes aegypti salivary proteins OBP 22 and OBP 10: A promising candidate vaccine.

Sankar S.
Oct-Dec 2022
J Vector Borne Dis.
https://pubmed.ncbi.nlm.nih.gov/36751764/

Background & objectives: The emergence and re-emergence of arboviruses such as dengue, Chikungunya and Zika viruses causing morbidity and mortality around the globe are of serious concern. A safe and effective vaccine is essential to control viral transmission. The salivary proteins of the mosquito that aid in blood probing, feeding and development are immunogenic. We aimed to report a multi-epitope candidate vaccine chimera from Aedes aegyptii mosquito salivary proteins OBP 22 and OBP 10 that could confer protection against all pathogens transmitted by the vector. Methods: Linear and conformation B-cell epitopes and MHC class-I and class-II binding T- cell epitopes were predicted using bioinformatic tools. Selected B- and T-cell epitopes were chosen for designing a multiepitope vaccine construct. The chimeric construct was analyzed for its immunogenicity, TAP and proteasomal cleavage, allergenicity, and structural validation for its suitability to be used as a candidate vaccine. Molecular docking was carried out to analyze the binding interactions with TLRs molecules. Results: A chimeric multiepitope vaccine was designed with the best-selected combination of immunogenic B-cell epitope, cytotoxic and helper T-cell and gamma interferon inducing epitopes with suitable adjuvant and linkers. The interacting residues between the candidate vaccine and the TLR molecules have been identified. Interpretation & conclusion: The proposed multiepitope candidate vaccine was designed from the mosquito salivary protein OBP 22 and OBP 10. The candidate vaccine was found promising for the protection against arboviruses. Further clinical validation is warranted to prove its efficacy, safety and immunogenicity for its potential use.

Antiviral & platelet-protective properties of Carica papaya in dengue.

Shrivastava N, Alagarasu K, Cherian S, Parashar D.
Sep-2022
Indian J Med Res.
https://pubmed.ncbi.nlm.nih.gov/36751743/

Burden in caregivers of children with congenital Zika syndrome in Pernambuco, Brazil: analysis and application of the Zarit burden interview scale.

Rego Filho JF, Sena C, Wajnsztejn R.
02-02-2023
PeerJ.
https://pubmed.ncbi.nlm.nih.gov/36751630/

With the increase in cases of microcephaly caused by the Zika virus, the demand for special care and a better quality of life for the child and caregiver increased proportionally.

Objective: This study aimed to analyze the burden on caregivers of children with congenital Zika syndrome associated with viral infections in the state of Pernambuco, Brazil using the Zarit Burden interview scale. **Method:** A quantitative study was conducted at the Oswaldo Cruz University Hospital, Recife City, State of Pernambuco, Brazil. By convenience sampling, 56 mothers, two grandmothers, and two caregivers were enrolled, all are female. Data were collected from July 2019 to January 2020. In the analysis, the percentage frequencies were calculated. The normality was identified using the Kolmogorov-Smirnov test, and participant profiles were compared using Student's *t*-test and analysis of variance. In descriptive statistics, quantitative variables are described by the median and interquartile range and categorical variables by proportions using the Chi-square test. **Results:** In the comparative analysis, all factors evaluated were significant, except for the "gestational period in which the disease occurred" ($p < 0.111$). The significance of differences in all activities was evaluated. In the mean comparison test, only the factor "has a job" was significant ($p < 0.043$). When comparing the average of caregivers' responses to the categories of the Zarit burden interview scale, the highest level of burden was regarding the feeling that the child is dependent on the caregiver (3.62 points). Caregiver burden was classified as absence, light, moderate, and high. **Conclusion:** The consequences of contracting the Zika virus in the first trimester of pregnancy, lack of paid work, financial scarcity, full-time dedication to the child, and lack of time for themselves increase the burden on caregivers. Thus, caregivers have mild burden.

Long-Segment Epidural Hemorrhage of the Cervical and Dorsal Spine: A Case Report of a Rare Complication of Dengue Virus Disease.

Patil C, Bandaru A, Bandari R, Kumar M, Kumar P.
06-01-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/36751224/

Clinical Research: A Review of Study Designs, Hypotheses, Errors, Sampling Types, Ethics, and Informed Consent.

Purna Singh A, Vadakedath S, Kandi V.
04-01-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/36751199/

Recently, we have been noticing an increase in the emergence and re-emergence of microbial infectious diseases. In the previous 100 years, there were several incidences of pandemics caused by different microbial species like the *influenza virus*, *human immunodeficiency virus* (HIV), *dengue virus*, *severe acute respiratory syndrome Coronavirus* (SARS-CoV), *middle east respiratory syndrome coronavirus* (MERS-CoV), and *SARS-CoV-2* that were responsible for severe morbidity and mortality among humans. Moreover, non-communicable diseases, including malignancies, diabetes, heart, liver, kidney, and lung diseases, have been on the rise. The medical fraternity, people, and governments all need to improve their preparedness to effectively tackle health emergencies. Clinical research, therefore, assumes increased significance in the current world and may potentially be applied to manage human health-related problems. In the current review, we describe the critical aspects of clinical research that include research designs, types of study hypotheses, errors, types of sampling, ethical concerns, and informed consent.

Epidemiological and genomic analysis of dengue cases in Guangzhou, China, from 2010 to 2019.

Jiang L, Liu Y, Su W, Liu W, Dong Z, Long Y, Luo L, Jing Q, Cao Y, Wu X, Di B.
07-02-2023
Sci Rep.
https://pubmed.ncbi.nlm.nih.gov/36750601/

Neem-based products as potential eco-friendly mosquito control agents over conventional eco-toxic chemical pesticides-A review.

Chatterjee S, Bag S, Biswal D, Sarkar Paria D, Bandyopadhyay R, Sarkar B, Mandal A, Dangar TK.
05-02-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36750152/

Current enzyme-mediated insecticide resistance status of Aedes aegypti populations from a dengue-endemic city in southern Mexico.

Solís-Santoyo F, Rodríguez AD, Black W, Saavedra-Rodríguez K, Sánchez-Guillén D, Castillo-Vera A, González-Gómez R, López-Solis AD, Penilla-Navarro RP.
02-01-2023
Salud Publica Mex.
https://pubmed.ncbi.nlm.nih.gov/36750076/

Objective: To identify the enzyme-mediated insecticide resistance in Aedes aegypti in Tapachula, Mexico. **Materials and methods:** Biochemical assays were undertaken to determine the enzyme levels in mosquitoes from 22 sites collected in 2018 and 2020 in Tapachula. Results of 2018 were correlated with the resistance to insecticides pub-lished. **Results:** Mosquitoes had higher levels than those of the susceptible strain in 2018 and 2020 respectively of α-esterases in 15 and 12 sites; β-esterases in 7 and 6 sites; glutathione-S-transferases in 11 and 19 sites; ρNPA-esterases in 21 and 17 sites; and cytochromes P450 in 20 and 22 sites. In mosquitoes of 2018, there was a moderate correlation between previously documented Malathion resistance ratios and the insensitive acetylcholinesterase (r=0.459, p= 0.03). **Conclusions:** The elevated enzyme levels found indicate its contribution to the resistance to pyrethroids and organo-phosphates already published in mosquitoes from Tapachula. Bioassays using enzyme inhibitors resulted in greater mor-tality, confirming that metabolism contributes to resistance.

South Asian Transplant Infectious Disease Guidelines for Solid Organ Transplant Candidates, Recipients, and Donors.

Bansal SB, Ramasubramanian V, Prasad N, Saraf N, Soman R, Makharia G, Varughese S, Sahay M, Deswal V, Jeloka T, Gang S, Sharma A, Rupali P, Shah DS, Jha V, Kotton CN.
07-02-2023
Transplantation.
https://pubmed.ncbi.nlm.nih.gov/36749281/

These guidelines discuss the epidemiology, screening, diagnosis, posttransplant prophylaxis, monitoring, and management of endemic infections in solid organ transplant (SOT) candidates, recipients, and donors in South Asia. The guidelines also provide recommendations for SOT recipients traveling to this region. These guidelines are based on literature review and expert opinion by transplant physicians, surgeons, and infectious diseases specialists, mostly from South Asian countries (India, Pakistan, Bangladesh, Nepal, and Sri Lanka) as well as transplant experts from other countries. These guidelines cover relevant endemic bacterial infections (tuberculosis, leptospirosis, melioidosis, typhoid, scrub typhus), viral infections (hepatitis A, B, C, D, and E; rabies; and the arboviruses including dengue, chikungunya, Zika, Japanese encephalitis), endemic fungal infections (mucormycosis, histoplasmosis, talaromycosis, sporotrichosis), and endemic parasitic infections (malaria, leishmaniasis, toxoplasmosis, cryptosporidiosis, strongyloidiasis, and filariasis) as well as travelers' diarrhea and vaccination for SOT candidates and recipients including travelers visiting this region. These guidelines are intended to be an overview of each topic; more detailed reviews are being published as a special supplement in the Indian Journal of Transplantation .

NSUN2-mediated m5C methylation of IRF3 mRNA negatively regulates type I interferon responses during various viral infections.

Wang H, Feng J, Zeng C, Liu J, Fu Z, Wang D, Wang Y, Zhang L, Li J, Jiang A, He M, Cao Y, Yan K, Tang H, Guo D, Xu K, Zhou X, Zhou L, Lan K, Zhou Y, Chen Y.
06-02-2023
Emerg Microbes Infect.
https://pubmed.ncbi.nlm.nih.gov/36748584/

Knockdown of NEAT1 restricts dengue virus replication by augmenting interferon alpha-inducible protein 27 via the RIG-I pathway.

Saini J, Thapa U, Bandyopadhyay B, Vrati S, Banerjee A.
Jan-2023
J Gen Virol.
https://pubmed.ncbi.nlm.nih.gov/36748518/

Distribution and mitochondrial CO1-based genetic diversity of Aedes aegypti L (Culicidae: Diptera) in Saudi Arabia.

Thabiani Aziz A.
Mar-2023
Saudi J Biol Sci.
https://pubmed.ncbi.nlm.nih.gov/36748075/

Mosquitoes (Diptera: Culicidae) act as vectors for various pathogens and parasites that affect millions of people worldwide. *Aedes aegypti* (Linnaeus, 1762) is one of the devastating pests of humans, acting as a key vector of dengue viruses. Therefore, correct identification of this serious pest to determine its distribution is paramount in its management. Morphological identification is usually based on the maturity and quality of the specimens. This can still yield ambiguous results in distinguishing *Ae. aegypti* species due to limited taxonomic expertise and the presence of cryptic species. In this research, mitochondrial CO1 gene-based identification was adopted to analyze 7 samples, each containing 7 specimens of *Ae. aegypti* from various localities of Saudi Arabia: Jeddah (A1), Makkah (A2), Al Madinah Al Munawwarah (A4), Jazan (A5), Qunfudah (A6), Yanbu (A8), and Najran (A10). DNA barcoding and maximum likelihood (ML) tree analysis revealed that all 49 species belong to *Ae. aegypti* and showed high similarity with specimens of this species worldwide.

Mechanism of glycoform specificity and protection against antibody dependent enhancement by an anti-afucosylated IgG nanobody.

Gupta A, Kao K, Yamin R, Oren DA, Goldgur Y, Du J, Lollar P, Sundberg EJ, Ravetch JV.
24-01-2023
bioRxiv.
https://pubmed.ncbi.nlm.nih.gov/36747840/

RIPK3 promotes brain region-specific interferon signaling and restriction of tick-borne flavivirus infection.

Lindman M, Angel JP, Estevez I, Chang NP, Chou TW, McCourt M, Atkins C, Daniels BP.
24-01-2023
bioRxiv.
https://pubmed.ncbi.nlm.nih.gov/36747672/

Engineered Antiviral Sensor Targets Infected Mosquitoes.

Dalla Benetta E, López-Denman AJ, Li HH, Masri RA, Brogan DJ, Bui M, Yang T, Li M, Dunn M, Klein MJ, Jackson S, Catalan K, Blasdell KR, Tng P, Antoshechkin I, Alphey LS, Paradkar PN, Akbari OS.
27-01-2023
bioRxiv.
https://pubmed.ncbi.nlm.nih.gov/36747634/

Escalating vector disease burdens pose significant global health risks, so innovative tools for targeting mosquitoes are critical. We engineered an antiviral strategy termed REAPER (v **R** NA **E** xpression **A** ctivates **P** oisonous **E** ffector **R** ibonuclease) that leverages the programmable RNA-targeting capabilities of CRISPR Cas13 and its potent collateral activity. Akin to a stealthy Trojan Horse hiding in

stealth awaiting the presence of its enemy, REAPER remains concealed within the mosquito until an infectious blood meal is up taken. Upon target viral RNA infection, REAPER activates, triggering programmed destruction of its target arbovirus such as chikungunya. Consequently, Cas13 mediated RNA targeting significantly reduces viral replication and its promiscuous collateral activity can even kill infected mosquitoes. This innovative REAPER technology adds to an arsenal of effective molecular genetic tools to combat mosquito virus transmission.

Growth in chikungunya virus-related research in ASEAN and South Asian countries from 1967 to 2022 following disease emergence: a bibliometric and graphical analysis.

Sofyantoro F, Frediansyah A, Priyono DS, Putri WA, Septriani NI, Wijayanti N, Ramadaningrum WA, Turkistani SA, Garout M, Aljeldah M, Al Shammari BR, Alwashmi ASS, Alfaraj AH, Alawfi A, Alshengeti A, Aljohani MH, Aldossary S, Rabaan AA.
06-02-2023
Global Health.
https://pubmed.ncbi.nlm.nih.gov/36747262/

Antiviral effects of the fused tricyclic derivatives of indoline and imidazolidinone on ZIKV infection and RdRp activities of ZIKV and DENV.

Zhou GF, Li F, Xue JX, Qian W, Gu XR, Zheng CB, Li C, Yang LM, Xiong SD, Zhou GC, Zheng YT.
07-02-2023
Virus Res.
https://pubmed.ncbi.nlm.nih.gov/36746341/

The prevalence and ravages of Zika virus (ZIKV) seriously endanger human health, especially causing significant neurological defects in both neonates as pediatric microcephaly and adults as Guillain-Barré syndrome. In this work, we studied anti-ZIKV effects of the fused tricyclic derivatives of indoline and imidazolidinone and discovered that some of them are valuable leads for drug discovery of anti-ZIKV agents. The current results show that certain compounds are broad-spectrum inhibitors of ZIKV- and dengue virus (DENV)-infection while distinctive compounds are selective ZIKV inhibitors or selective DENV inhibitors. Compounds of 12, 17 and 28 are more active against Asian ZIKV SZ-VIV01 strain than African ZIKV MR766 strain. It is valued that silylation makes six TBS compounds of 4-nitrophenyl hydrazine series and phenyl hydrazine series more active against ZIKV infection than their phenols. Time-of-addition and withdrawal studies indicate that compound 12 majorly acts on post-infection of RNA synthesis stage of ZIKV life cycle. Moreover, compounds of 12, 17 and 18 are anti-ZIKV agents with the inhibitory activities to ZIKV NS5 RdRp while 12 doesn't inhibit DENV infection even though it is a DENV RdRp inhibitor, 17 is an active agent against DENV infection but is only a weak DENV NS5 RdRp inhibitor, and 28 is inactive against DENV infection and not a DENV NS5 RdRp inhibitor. As a result, a compound's antiviral difference between ZIKV and DENV is not always related to anti-RdRp difference between ZIKV RdRp and DENV RdRp, and structural features of a compound play important roles in executing antiviral and anti-RdRp functions. Further discovery of highly potent broad-spectrum or selective agents against infection by ZIKV and DENV will be facilitated.

Dengue incidence and length of viremia by RT-PCR in a prospective observational community contact cluster study from 2005-2009 in Indonesia.

Riswari SF, Velies DS, Lukman N, Jaya UA, Djauhari H, Ma'roef CN, Myint KSA, Widjaja S, der Ven AV, Alisjahbana B, Mast Q, Kosasih H.
06-02-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/36745606/

Chikungunya virus entry and infectivity is primarily facilitated through cell line dependent attachment factors in mammalian and mosquito cells.

Reyes Ballista JM, Miazgowicz KL, Acciani MD, Jimenez AR, Belloli RS, Havranek KE, Brindley MA.
20-01-2023
Front Cell Dev Biol.
https://pubmed.ncbi.nlm.nih.gov/36743418/

Dengue is the most prevalent mosquito-borne viral disease and continues to be a global public health concern. Although a licensed dengue vaccine is available, its efficacy and safety profile are not satisfactory. Hence, there remains a need for a safe and effective dengue vaccine. We are currently developing a bivalent dengue vaccine candidate. This vaccine candidate is composed of a C-terminus truncated non-structural protein 1 ($NS1_{1-279}$) and envelope domain III (EDIII) of DENV-2 encapsidated in the nanocarriers, N, N, N-trimethyl chitosan nanoparticles (TMC NPs). The immunogenicity of this bivalent vaccine candidate was investigated in the present study using BALB/c mice. In this work, we demonstrate that NS1 + EDIII TMC NP-immunized mice strongly elicited antigen-specific antibody responses (anti-NS1 and anti-EDIII IgG) and T-cell responses (NS1- and EDIII-specific-$CD4^+$ and $CD8^+$ T cells). Importantly, the antibody response induced by NS1 + EDIII TMC NPs provided antiviral activities against DENV-2, including serotype-specific neutralization and antibody-mediated complement-dependent cytotoxicity. Moreover, the significant upregulation of Th1- and Th2-associated cytokines, as well as the increased levels of antigen-specific IgG2a and IgG1, indicated a balanced Th1/Th2 response. Collectively, our findings suggest that NS1 + EDIII TMC NPs induced protective responses that can not only neutralize infectious DENV-2 but also eliminate DENV-2-infected cells.

Host-Viral Interactions at the Maternal-Fetal Interface. What We Know and What We Need to Know.

Girsch JH, Mejia Plazas MC, Olivier A, Farah M, Littlefield D, Behl S, Punia S, Sakemura R, Hemsath JR, Norgan A, Enninga EAL, Johnson EL, Chakraborty R.

Mar-2022
Frontiers (Boulder).
https://pubmed.ncbi.nlm.nih.gov/36742289/

Dengue Dilemma in Nepal.

Banerjee I, Robinson J, Sathian B.
31-12-2023
Nepal J Epidemiol.
https://pubmed.ncbi.nlm.nih.gov/36741772/

A bivalent form of nanoparticle-based dengue vaccine stimulated responses that potently eliminate both DENV-2 particles and DENV-2-infected cells.

Seesen M, Jearanaiwitayakul T, Limthongkul J, Midoeng P, Sunintaboon P, Ubol S.
03-02-2023
Vaccine.
https://pubmed.ncbi.nlm.nih.gov/36740559/

Dengue is the most prevalent mosquito-borne viral disease and continues to be a global public health concern. Although a licensed dengue vaccine is available, its efficacy and safety profile are not satisfactory. Hence, there remains a need for a safe and effective dengue vaccine. We are currently developing a bivalent dengue vaccine candidate. This vaccine candidate is composed of a C-terminus truncated non-structural protein 1 ($NS1_{1-279}$) and envelope domain III (EDIII) of DENV-2 encapsidated in the nanocarriers, N, N, N-trimethyl chitosan nanoparticles (TMC NPs). The immunogenicity of this bivalent vaccine candidate was investigated in the present study using BALB/c mice. In this work, we demonstrate that NS1 + EDIII TMC NP-immunized mice strongly elicited antigen-specific antibody responses (anti-NS1 and anti-EDIII IgG) and T-cell responses (NS1- and EDIII-specific-$CD4^+$ and $CD8^+$ T cells). Importantly, the antibody response induced by NS1 + EDIII TMC NPs provided antiviral activities against DENV-2, including serotype-specific neutralization and antibody-mediated complement-dependent cytotoxicity. Moreover, the significant upregulation of Th1- and Th2-associated cytokines, as well as the increased levels of antigen-specific IgG2a and IgG1, indicated a balanced Th1/Th2 response. Collectively, our findings suggest that NS1 + EDIII TMC NPs induced protective responses that can not only neutralize infectious DENV-2 but also eliminate DENV-2-infected cells.

The Clinical Utility of CD163 in Viral Diseases.

Yap YJ, Wong PF, AbuBakar S, Sam SS, Shunmugarajoo A, Soh YH, Misbah S, Kashfi Ab Rahman A.
03-02-2023
Clin Chim Acta.
https://pubmed.ncbi.nlm.nih.gov/36740088/

Development of novel antiviral peptides against dengue serotypes 1-4.

Lee MF, Anasir MI, Poh CL.
31-01-2023
Virology.
https://pubmed.ncbi.nlm.nih.gov/36739680/

Dengue infections pose a critical threat to public health worldwide. Since there are no clinically approved antiviral drugs to treat dengue infections caused by the four dengue virus (DENV) serotypes, there is an urgent need to develop effective antivirals. Peptides are promising antiviral candidates due to their specificity and non-toxic properties. The DENV envelope (E) protein was selected for the design of antiviral peptides due to its importance in receptor binding and viral fusion to the host cell membrane. Twelve novel peptides were designed to mimic regions containing critical amino acid residues of the DENV E protein required for interaction with the host. A total of four peptides were identified to exhibit potent inhibitory effects against at least three or all four DENV serotypes. Peptide 3 demonstrated all three modes of action: cell protection and inhibition of post-infection against all four DENV serotypes, whereas direct virus-inactivating effects were only observed against DENV-2, 3, and 4. Peptide 4 showed good direct virus-inactivating effects against DENV-2 (74.26%) as well as good inhibitions of DENV-1 (80.37%) and DENV-4 (72.22%) during the post-infection stage. Peptide 5 exhibited direct virus-inactivating effects against all four DENV serotypes, albeit at lower inhibition levels against DENV-1 and DENV-3. It also exhibited highly significant inhibition of DENV-4 (89.31%) during post-infection. Truncated peptide 5F which was derived from peptide 5 showed more significant inhibition of DENV-4 (91.58%) during post-infection and good direct virus-inactivating effects against DENV-2 (77.55%) at a lower concentration of 100 µM. Peptide 3 could be considered as the best antiviral candidate for pre- and post-infection treatments of DENV infections in regions with four circulating dengue serotypes. However, if the most predominant dengue serotype for a particular region could be identified, peptides with significantly high antiviral activities against that particular dengue serotype could serve as more suitable antiviral candidates. Thus, peptide 5F serves as a more suitable antiviral candidate for post-infection treatment against DENV-4.

Zika virus leads to olfactory disorders in mice by targeting olfactory ensheathing cells.

Zhou J, Guan MY, Li RT, Qi YN, Yang G, Deng YQ, Li XF, Li L, Yang X, Liu JF, Qin CF.
03-02-2023
EBioMedicine.
https://pubmed.ncbi.nlm.nih.gov/36739631/

Electrochemical magneto-immunoassay for detection of zika virus antibody in human serum.

Castro KR, Setti GO, de Oliveira TR, Rodrigues-Jesus MJ, Botosso VF, Perini de Araujo AP, Durigon EL, Ferreira LCS, Faria RC.
21-01-2023
Talanta.
https://pubmed.ncbi.nlm.nih.gov/36738622/

Zika virus (ZIKV) is a flavivirus transmitted by infected Aedes genus mosquitoes. An infected person may be asymptomatic or present symptoms such as fever, arthralgia, and in pregnancy it may lead to neurological disorders in the fetus, such as microcephaly. Based on the high dissemination potential of ZIVK and its similar antigen composition to other arboviruses, new approaches for selective virus detection are urgently needed. This work reports the development of an electrochemical immunoassay for detection of anti-ZIKV antibodies, using magnetic beads functionalized with recombinant protein derived from the non-structural protein 1 (ΔNS1-ZIKV) and anti-IgG antibodies labeled with horseradish peroxidase (HRP) enzyme. The magneto-immunoassay uses disposable microfluidic devices for detection of anti-ZIKV in serum samples. A linear response was obtained for a wide concentration range from 0.01 to 9.80 × 10^5 pg mL^{-1} (r^2 = 0.982), with a limit of detection of 0.48 pg mL^{-1}. The proposed immunoassay proved to be highly efficient for the detection of anti-ZIKV antibodies in serum, offering promising perspectives for the development of fast, simple, and affordable point-of-care diagnosis devices for ZIKV.

Establishment of quantitative and recovery method for detection of dengue virus in wastewater with noncognate spike control.

Chen KW, Chen TY, Wang ST, Hou TY, Wang SW, Young KC.
01-02-2023
J Virol Methods.
https://pubmed.ncbi.nlm.nih.gov/36736703/

Antibody cross-reactivity and evidence of susceptibility to emerging Flaviviruses in the dengue-endemic Brazilian Amazon.

Salgado BB, Maués FCJ, Jordão M, Pereira RL, Toledo-Teixeira DA, Parise PL, Granja F, Souza HFS, Yamamoto MM, Chiang JO, Martins LC, Boscardin SB, Lalwani JDB, Vasconcelos PFC, Proença-Modena JL, Lalwani P.
31-01-2023
Int J Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/36736575/

The dengue virus 4 component of NIAID's tetravalent TV003 vaccine drives its innate immune signature.

Pintado Silva J, Fenutria R, Bernal-Rubio D, Sanchez-Martin I, Hunziker A, Chebishev E, Veloz J, Kelly G, Kim-Schulze S, Whitehead S, Durbin A, Ramos I, Fernandez-Sesma A.
Dec-2022
Exp Biol Med (Maywood).
https://pubmed.ncbi.nlm.nih.gov/36734144/

Annually, roughly 2.5 billion people are at risk for dengue virus (DENV) infection, and the incidence of infection has increased 30-fold since its discovery in the 1900s. At present, there are no globally licensed antiviral treatments or vaccines that protect against all four of the DENV serotypes. The NIAID Live Attenuated Tetravalent Vaccine (LATV) dengue vaccine candidate is composed of variants of three DENV serotypes attenuated by a 30 nucleotide (Δ30) deletion in the 3' untranslated region and a fourth component that is a chimeric virus in which the prM and E genes of DENV-2 replace those of DENV-4 on the rDEN4Δ30 backbone. The vaccine candidate encodes the non-structural proteins of DENV-1, DENV-3, and DENV-4, which could be of critical importance in the presentation of DENV-specific epitopes in a manner that facilitates antigen presentation and confers higher protection. Our findings demonstrate that the attenuation mechanism (Δ30) resulted in decreased viral infectivity and replication for each vaccine virus in monocyte-derived dendritic cells but were able to generate a robust innate immune response. When tested as monovalent viruses, DEN-4Δ30 displayed the most immunogenic profile. In addition, we found that the tetravalent DENV formulation induced a significantly greater innate immune response than the trivalent formulation. We demonstrate that the presence of two components with a DENV-4Δ30 backbone is necessary for the induction of RANTES, CD40, IP-10, and Type I IFN by the tetravalent formulation. Finally, we found that the DEN-4Δ30 backbone in the DENV-2 component of the vaccine enhanced its antigenic properties, as evidenced by enhanced ability to induce IP-10 and IFNα2 in monocyte-derived dendritic cells. In sum, our study shows that the Δ30 and Δ30/Δ31 mutations attenuate the DENV vaccine strains in terms of replication and infectivity while still allowing the induction of a robust innate immune response.

Extracellular vesicles from Zika virus-infected cells display viral E protein that binds ZIKV-neutralizing antibodies to prevent infection enhancement.

Zhao F, Xu Y, Liu N, Lv D, Chen Y, Liu Z, Jin X, Xiao M, Lavillette D, Zhong J, Bartenschlager R, Long G.
03-02-2023
EMBO J.
https://pubmed.ncbi.nlm.nih.gov/36734074/

Mapping patient pathways and understanding clinical decision-making in dengue management to inform the development of digital health tools.

Nguyen QH, Ming DK, Luu AP, Chanh HQ, Tam DTH, Truong NT, Huy VX, Hernandez B, Van Nuil JI, Paton C, Georgiou P, Nguyen NM, Holmes A, Tho PV, Yacoub S; Vietnam ICU Translational Applications Laboratory (VITAL) investigators.
02-02-2023
BMC Med Inform Decis Mak.
https://pubmed.ncbi.nlm.nih.gov/36732718/

Quantifying heterogeneities in arbovirus transmission: Description of the rationale and methodology for a prospective longitudinal study of dengue and Zika virus transmission in Iquitos, Peru (2014-2019).

Morrison AC, Paz-Soldan VA, Vazquez-Prokopec GM, Lambrechts L, Elson WH, Barrera P, Astete H, Briesemeister V, Leguia M, Jenkins SA, Long KC, Kawiecki AB, Reiner RC Jr, Perkins TA, Lloyd AL, Waller LA, Hontz RD, Stoddard ST, Barker CM, Kitron U, Elder JP, Rothman AL, Scott TW; Proyecto Dengue Group.
02-02-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/36730229/

Inhibition of chikungunya virus replication by N-ω-Chloroacetyl-L-Ornithine in C6/36, Vero cells and human fibroblast BJ.

Rojas-Luna L, Posadas-Modragón A, Avila-Trejo AM, Alcántara-Farfán V, Rodríguez-Páez LI, Santiago-Cruz JA, Pastor-Alonso MO, Aguilar-Faisal JL.
Feb-2023
Antivir Ther.
https://pubmed.ncbi.nlm.nih.gov/36724136/

Background: Polyamines are involved in several cellular processes and inhibiting their synthesis affects chikungunya virus (CHIKV) replication and translation, and, therefore, reduces the quantity of infectious viral particles produced. In this study, we evaluated the inhibition of CHIKV replication by N-ω-chloroacetyl-L-ornithine (NCAO), a competitive inhibitor of ornithine decarboxylase, an enzyme which is key in the biosynthesis of polyamines (PAs). Methods: The cytotoxicity of NCAO was evaluated by MTT in cell culture. The inhibitory effect of CHIKV replication by NCAO was evaluated in Vero and C6/36 cells. The intracellular polyamines were quantified by HPLC in CHIKV-infected cells. We evaluated the yield of CHIKV in titres via the addition of PAs in Vero, C6/36 cells and human fibroblast BJ treated with NCAO. Results: We found that NCAO inhibits the replication of CHIKV in Vero and C6/36 cells in a dose-dependent manner, causing a decrease in the PFU/mL of at least 4 logarithms ($p < 0.01$) in both cell lines. Viral yields were restored by the addition of exogenous polyamines, mainly putrescine. The HPLC analyses showed that NCAO decreases the content of intracellular PAs, even though it is predominantly spermidines and spermines which are present in infected cells. Inhibition of CHIKV replication was observed in human fibroblast BJ treated with 100 µM NCAO 24 h before and 48 h after the infection at a MOI 1.

Conclusions: NCAO inhibits CHIKV replication by depleting the intracellular polyamines in Vero, C6/36 cells and human fibroblast BJ, suggesting that this compound is a possible antiviral agent for CHIKV.

Assessing the hearing of children exposed to zika virus with an initially normal newborn hearing screen: a longitudinal cohort study.

Prestes R, Pandini VCM, Pereira T, Pomilio MCA, Andrade AN, Mizani RM, Fajardo TCG, Gazeta RE, Bertozzi APAP, Lourenço EA, Passos SD.
Jan-2023
Acta Otolaryngol.
https://pubmed.ncbi.nlm.nih.gov/36661392/

Background: Zika virus (ZIKV) infection can result in hearing loss in babies, consequently, audiological monitoring is necessary. Aims: This study aimed to evaluate the frequency of hearing impairment in neonates and children exposed to ZIKV during the intrauterine period. Materials and methods: A cohort of 30 children born to mothers infected with ZIKV during pregnancy (March 2016-January 2017) underwent repeated hearing assessments performed 48 h after birth. Universal Newborn Hearing Screening revealed normal results in all children at 6, 13, 24, and 36 months. Children were divided into two subgroups based on real-time polymerase chain reaction: RT-PCR(+) and RT-PCR(-). Results: At 24 months, the cumulative incidence of hearing alteration was 57.1%. There was no significant difference in the detection of hearing alteration between RT-PCR(+) and (-) groups. None of the children had sensorineural hearing loss. Conclusions and significance: None of the children had sensorineural hearing loss. Total incidence conductive type (per 1000 live births), RT-PCR ZIKV (-) 2.2, prevalence 20% and RT-PCR ZIKV 3.1, prevalence 35.7%.The incidence of hearing alteration was highest at 24 months of age (57.1%, $n = 8$; only conductive type).

Determinants of exposure to Aedes mosquitoes: A comprehensive geospatial analysis in peri-urban Cambodia.

Parker DM, Medina C, Bohl J, Lon C, Chea S, Lay S, Kong D, Nhek S, Man S, Doehl JSP, Leang R, Kry H, Rekol H, Oliveira F, Minin VM, Manning JE.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36649803/

An alternating transmission model between mice and mosquitoes for genetic study of dengue virus.

Zhu X, Jiang Y, Zhang H, Li C, Xing D, Guo X, Zhao T.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36646237/

Rapidly increased incidence and prevalence of dengue virus serotype 2 (DENV-2) in recent decades highlight the need for better understanding of the selective pressures that drive genetic and phenotypic changes in this virus. We simulated the transfer of DENV-2 between human hosts and mosquito vectors by horizontally transmitting the virus between suckling mice and Aedes aegypti (Linnaeus, Diptera: Culicidae). A total of 3 cycles of alternating transmission were performed and 3 passages of virus population were harvested from the infected sucking mice. The viral titer in mice brain and infectivity to mosquitoes of theses viral populations were tested. The genome of the viruses was also sequenced. Results showed that viral titer were similar and infection rate in the mosquitoes were not significantly different among those 3 passages. This in vivo model could be utilized to explore virus evolution and genetic variance in alternating transmission.

Effects of gamma radiation on the vector competence of Aedes aegypti (diptera: Culicidae) to transmit Zika virus.

da Silva EB, de Mendonça CM, Guedes DRD, Paiva MHS, Mendonça JA, Dias ESF, Florêncio SGL, Amaral A, Netto AM, Lopes CFJA, de Melo-Santos MAV.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36640923/

One of the limitations of the Sterile Insect Technique (SIT), conventionally performed by ionizing radiation, regards separating males from females, which is not 100% effective. Some irradiated females may be released together with males in the field at SIT. The present study aimed to evaluate the influence of ionizing radiation on the ability of Aedes aegypti mosquitoes to transmit the Zika virus after exposing female pupae to a 40 Gy of gamma radiation. The results suggest that the genetic damage induced by exposure of females to this dose level promotes their total sterility, but it does not influence their vector competence. However, our data point out that ionizing radiation may decrease the proportion of infective mosquitoes.

Household ovicidal alternative for complementary control of Aedes aegypti in the Gran San Miguel de Tucuman agglomerate, Tucumán, Argentina.

Rodríguez GA, Pomares MA, Herrera Gil VG, Ávila Herrera GMD, Angeletti AO, Zarate JC, Jozami AC, Diaz Briz LM, Fuenzalida AD, Lizarralde de Grosso MS, Flores IDC, Claps GL, Quintana MG.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36623631/

A method for mapping the linear epitopes targeted by the natural antibody response to Zika virus infection using a VLP platform technology.

Fowler A, Ye C, Clarke EC, Pascale JM, Peabody DS, Bradfute SB, Frietze KM, Chackerian B.
Feb-2023
Virology.
https://pubmed.ncbi.nlm.nih.gov/36623351/

Zika virus (ZIKV), a mosquito-borne pathogen, is associated with neurological complications in adults and congenital abnormalities in newborns. There are no vaccines or treatments for ZIKV infection. Understanding the specificity of natural antibody responses to ZIKV could help inform vaccine efforts. Here, we used a technology called Deep Sequence-Coupled Biopanning to map the targets of the human antibody responses to ZIKV infection. A bacteriophage virus-like particle (VLP) library displaying overlapping linear peptides derived from the ZIKV polyprotein was generated. The library was panned using IgG from 23 ZIKV-infected patients from Panama and deep sequencing identified common targets of anti-ZIKV antibodies within the ZIKV envelope glycoprotein. These included epitopes within the fusion loop within domain II and four epitopes within domain III. Additionally, we showed that VLPs displaying selected epitopes elicited antibodies that bound to native ZIKV envelope protein but failed to prevent infection in a mouse challenge model.

American-Asian- and African lineages of Zika virus induce differential pro-inflammatory and Interleukin 27-dependent antiviral responses in human monocytes.

Hernández-Sarmiento LJ, Valdés-López JF, Urcuqui-Inchima S.
Feb-2023
Virus Res.
https://pubmed.ncbi.nlm.nih.gov/36610657/

Cepharanthine inhibits dengue virus production and cytokine secretion.

Phumesin P, Panaampon J, Kariya R, Limjindaporn T, Yenchitsomanus PT, Okada S.
Feb-2023
Virus Res.
https://pubmed.ncbi.nlm.nih.gov/36587870/

Dengue virus induced autophagy is mediated by HMGB1 and promotes viral propagation.

Chaudhary N, Srivastava S, Gupta S, Menon MB, Patel AK.
28-02-2023
Int J Biol Macromol.
https://pubmed.ncbi.nlm.nih.gov/36587643/

Dengue virus (DENV) exploits various cellular pathways including autophagy to assure enhanced virus propagation. The mechanisms of DENV mediated control of autophagy pathway are largely unknown. Our investigations have revealed a novel role for high-mobility group box1 protein (HMGB1) in regulation of cellular autophagy process in DENV-2 infected A549 cell line. While induction of autophagy by rapamycin treatment resulted in enhanced DENV-2 propagation, the blockade of autophagy flux with bafilomycin A1 suppressed viral replication. Furthermore, siRNA-mediated silencing of HMGB1 significantly abrogated dengue induced autophagy, while LPS induced HMGB1 expression counteracted these effects. Interestingly, silencing of HMGB1 showed reduction of BECN1 and stabilization of BCL-2 protein. On the contrary, LPS induction of HMGB1 resulted in enhanced BECN1 and reduction in BCL-2 levels. This study shows that the modulation of autophagy by DENV-2 is HMGB1/BECN1 dependent. In addition, glycyrrhizic acid (GA), a potent HMGB1 inhibitor suppressed autophagy as well as DENV-2 replication. Altogether, our data suggests that HMGB1 induces BECN1 dependent autophagy to promote DENV-2 replication.

Acceptability of a Chikungunya Virus Vaccine, United States Virgin Islands.

Curren EJ, Ellis EM, Hennessey MJ, Delorey MJ, Fischer M, Staples JE.

26-12-2022
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36572007/

Chikungunya virus, a mosquito-borne alphavirus, causes acute febrile illness with polyarthralgia. Groups at risk for severe disease include neonates, people with underlying medical conditions, and those aged ≥ 65 years. Several chikungunya vaccines are in late clinical development with licensure expected in the United States during 2023. We administered a questionnaire to randomly selected households in the U.S. Virgin Islands (USVI) to assess interest in a hypothetical chikungunya vaccine. Estimates were calibrated to age and sex of USVI population, and univariate and multivariable analyses were performed. Of 966 participants, 520 (adjusted 56%, 95% CI = 51-60%) were interested in receiving the vaccine. Of 446 participants not interested in vaccination, 203 (adjusted 47%, 95% CI = 41-52%) cited safety concerns as the reason. Educational efforts addressing vaccine safety concerns and risk factors for severe disease would likely improve vaccine acceptability and uptake among those most at risk.

Anopheles albimanus is a Potential Alphavirus Vector in the Americas.

Terradas G, Novelo M, Metz H, Brustolin M, Rasgon JL.
19-12-2022
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36535260/

Seroprevalence of Chikungunya in an Asymptomatic Adult Population in North and South Sulawesi, Indonesia.

A Jalloh M, Artika IM, P Dewi Y, Syafruddin D, Idris I, B B Bernadus J, Telew A, S Purwanto D, D Rosita Y, Antonjaya U, S A Myint K.
19-12-2022
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36535254/

Effect of Sauropus androgynus L. Merr. on dengue virus-2: An in vitro and in silico study.

Joshi RK, Agarwal S, Patil P, Alagarasu K, Panda K, Prashar C, Kakade M, Davuluri KS, Cherian S, Parashar D, Pandey KC, Roy S.
25-03-2023
J Ethnopharmacol.
https://pubmed.ncbi.nlm.nih.gov/36528212/

Ethnopharmacological relevance: Sauropus androgynus L. Merr. (Euphorbiaceae) commonly known as "multigreen" and "multivitamin" is consumed as a vegetable and used in traditional medicine to relieve fever. Aim of the study: This in vitro study is aimed to explore the activities of the lipophilic fraction of the leaves of S. androgynus (LFSA) against dengue (DENV), chikungunya (CHIKV) viruses and malaria (P. falciparum strain 3D7) parasite. Materials and methods: The LFSA was analyzed by using GC-FID and GC-MS. The antiviral activity of LFSA was studied using the Vero CCL-81 cell line. The cytotoxicity assay was performed using 3-(4,5-dimethythiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT). Focus forming unit (FFU), cell-based immunofluorescence (IFA) assays, and quantitative RT-PCR, were used to determine and confirm antiviral activity against DENV and CHIKV. The antiparasitic activity of LFSA was carried out against P. falciparum strain 3D7 grown in fresh O+ human erythrocytes culture. Results: Twelve compounds were identified in LFSA using GC/MS. The most abundant compound was squalene (36.9%), followed by vitamin E (12.5%) and linolenic acid (10.2%). Significant reduction in DENV titre was observed under pre- and post-infection treatment conditions at a concentration of 31.25 µg/ml, but no anti-malarial and anti-CHIKV activity was observed. The Autodock-Vina-based in-silico docking study revealed that β-sitosterol could form a strong interaction with the DENV E glycoprotein. Conclusion: Our findings suggest that LFSA can inhibit DENV infection and might act as a potent prophylactic/therapeutic agent against DENV-2. In-silico results suggested that β-sitosterol may block the viral entry by inhibiting the fusion process.

Zika virus as a cause of birth defects: Were the teratogenic effects of Zika virus missed for decades?

Gilbert RK, Petersen LR, Honein MA, Moore CA, Rasmussen SA.
01-02-2023
Birth Defects Res.
https://pubmed.ncbi.nlm.nih.gov/36513609/

Zika virus (ZIKV) was identified as a teratogen in 2016 when an increase in severe microcephaly and other brain defects was observed in fetuses and newborns following outbreaks in French Polynesia (2013-2014) and Brazil (2015-2016) and among travelers to other countries experiencing outbreaks. Some have questioned why ZIKV was not recognized as a teratogen before these outbreaks: whether novel genetic changes in ZIKV had increased its teratogenicity or whether its association with birth defects had previously been undetected. Here we examine the evidence for these two possibilities. We describe evidence for specific mutations that arose before the French Polynesia outbreak that might have increased ZIKV teratogenicity. We also present information on children born with findings consistent with congenital Zika syndrome (CZS) as early as 2009 and epidemiological evidence that suggests increases in CZS-type birth defects before 2013. We also explore reasons why a link between ZIKV and birth defects might have been missed, including issues with surveillance of ZIKV infections and of birth defects, challenges to ZIKV diagnostic testing, and the susceptibility of different populations to ZIKV infection at the time of pregnancy. Although it is not possible to prove definitively that ZIKV had teratogenic properties before 2013, several pieces of evidence support the hypothesis that its teratogenicity had been missed in the past. These findings emphasize the need for further investments in global surveillance for emerging infections and for birth defects so that infectious teratogens can be identified more expeditiously in the future.

Kidney Pathology of Tropical and Nontropical Infectious Diseases in the Pediatric Population.

Williams M, Reisler J, James T, Afrouzian M.
01-02-2023
Am J Clin Pathol.
https://pubmed.ncbi.nlm.nih.gov/36490362/

Boroleucine-Derived Covalent Inhibitors of the ZIKV Protease.

Braun NJ, Huber S, Schmacke LC, Heine A, Steinmetzer T.
01-02-2023
ChemMedChem.
https://pubmed.ncbi.nlm.nih.gov/36325810/

The Zika virus (ZIKV) remains a potential threat to the public health due to the lack of both an approved vaccination or a specific treatment. In this work, a series of peptidic inhibitors of the ZIKV protease with boroleucine as P1 residue was synthesized. The highest affinities with K_i values down to 8 nM were observed for compounds with basic residues in both P2 and P3 position and at the N-terminus. The low potency of reference compounds containing leucine, leucine-amide or isopentylamide as P1 residue suggested a covalent binding mode of the boroleucine-derived inhibitors. This was finally proven by crystal structure determination of the most potent inhibitor from this series in complex with the ZIKV protease.

Using Videography to Study the Biomechanics and Behavior of Freely Moving Mosquitoes.

Dickerson AK, Muijres FT, Pieters R.
01-02-2023
Cold Spring Harb Protoc.
https://pubmed.ncbi.nlm.nih.gov/36167673/

Therapeutic plasma exchange as a treatment modality for steroid refractory acute disseminated encephalomyelitis - A case report.

Pandeep K, Rakesh K, Mohitpreet S, Prabhjeet S.
Feb-2023
Transfus Clin Biol.
https://pubmed.ncbi.nlm.nih.gov/36007859/

The epidemiology of Dengue fever in the Indian subcontinent has been substantially increased. Acute disseminating encephalomyelitis is a rare complication of dengue and is characterized by multifocal white matter involvement and encephalopathy with neurological deficits. Treatment is usually steroids, IVIG and therapeutic plasma exchange (TPE). We report a case of 46 year old female patient who was a non responder to steroid treatment and successfully treated by TPE.

Molecular Docking Analysis of Adhatoda vasica with Thromboxane A2 Receptor (TXA2R) (6IIU) and Antiviral Molecules for Possible Dengue Complications.

Thangaraju P, Narasimhan G, Ramamurthy VA, Gurunthalingam MP, Yella SST, Venkatesan S, Thangaraju E.
2023
Infect Disord Drug Targets.
https://pubmed.ncbi.nlm.nih.gov/35850647/

Objective: The present study is an in silico model of platelet amplification potential of Adhatoda vasica, which can be used to treat thrombocytopenia in dengue complications. Methods: Docking studies have proved to be an essential tool that facilitates the structural diversity of natural products to be harnessed in an organized manner. In the present study, vasicine containing natural anti-dengue potential was subjected to docking studies using Schrodinger glides software (ver.11.1). The docking study was carried out to find out the potential molecular targets for selected protein. The docking was carried out on different ligands, like vasicine, ramatroban, chloroquine, celgosivir, and standard eltrombopag downloaded from PubChem and retrieved to glide software and ligands prepared using lig prep wizard. Docking was performed using the ligand docking wizard of Glide-maestro 2018. Results: The docking score of vasicine (-5.27) is nearly identical to the standard eltrombopag (-6.08), and both ligands bind with one hydrogen bond. The validation score of ramatroban is -12.39, binding with five hydrogen bonds, Celgosivir exhibited a docking score of -7.3 with three hydrogen bonds, and chloroquine displayed no hydrogen bond but had a docking score of -4.6. Conclusion: Vasicine was found to be the most suitable target of platelet amplification potential from Adhatoda vasica. However, the molecular docking results are preliminary, and it has been indicated that vasicine could be one of the potential ligands to treat the thrombocytopenia of dengue; experimental evaluation will be carried out in the near future.

Experiences of women raising children with congenital Zika syndrome along a trajectory of prevention, care and support in Brazil.

Morris M, Brito A, Malta M, Jacques I, Rocha G, Novaes R, Mantsios A, Kerrigan D.
Dec-2022
Glob Public Health.
https://pubmed.ncbi.nlm.nih.gov/35849617/

Anti-arboviral activity and chemical characterization of hispidulin and ethanolic extracts from Millingtonia hortensis L.f. and Oroxylum indicum (L.) Kurz (Bignoniaceae).

Cardoso Reis AC, Valente GM, Silva BM, de Brito Magalhães CL, Kohlhoff M, Brandão GC.
Feb-2023
Nat Prod Res.
https://pubmed.ncbi.nlm.nih.gov/35428404/

Millingtonia hortensis L.f. and *Oroxylum indicum* (L.) Kurz (Bignoniaceae) are native species from the Asian continent. They are popularly used in traditional medicine and their extracts are rich in flavonoids. In this work,

ethanolic extracts of stems and leaves of these species were evaluated against the Chikungunya, Zika and Mayaro virus. The extracts were subjected to analysis by ultra-efficient liquid chromatography coupled to mass spectrometry. Additionally, *M. hortensis* leaves extract was fractionated, leading to the isolation of hispidulin. Anti-arboviral activity against the three viruses was detected for *M. hortensis* leaves extract with EC_{50} ranging from 37.8 to 134.1 µg/mL and for *O. indicum* stems extract with EC_{50} ranging from 18.6 to 55.9 µg/mL. Hispidulin inhibited viral cytopathic effect of MAYV (EC_{50} value 32.2 µM) and CHIKV (EC_{50} value 78.8 µM). In LC-DAD-ESI-MS/MS analysis we characterized 25 flavonoids confirming once again the presence of these substances in extracts of these species.

Has Zika Been Forgotten? Findings From Nationwide Survey on Knowledge, Attitudes, and Mosquito Preventive Practices in Malaysia.

Wong LP, Alias H, Lee HY, AbuBakar S.
11-04-2022
Disaster Med Public Health Prep.
https://pubmed.ncbi.nlm.nih.gov/35400356/

Chikungunya Virus Vaccine Candidate Incorporating Synergistic Mutations Is Attenuated and Protects Against Virulent Virus Challenge.

Lentscher AJ, McAllister N, Griswold KA, Martin JL, Welsh OL, Sutherland DM, Silva LA, Dermody TS.
01-02-2023
J Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/35196388/

Background: Chikungunya virus (CHIKV) is an arbovirus that periodically emerges to cause large epidemics of arthritic disease. Although the robust immunity elicited by live-attenuated virus (LAV) vaccine candidates makes them attractive, CHIKV vaccine development has been hampered by a high threshold for acceptable adverse events. Methods: We evaluated the vaccine potential of a recently described LAV, skeletal muscle-restricted virus (SKE), that exhibits diminished replication in skeletal muscle due to insertion of target sequences for skeletal muscle-specific miR-206. We also evaluated whether these target sequences could augment safety of an LAV encoding a known attenuating mutation, E2 G82R. Attenuation of viruses containing these mutations was compared with a double mutant, SKE G82R. Results: SKE was attenuated in both immunodeficient and immunocompetent mice and induced a robust neutralizing antibody response, indicating its vaccine potential. However, only SKE G82R elicited diminished swelling in immunocompetent mice at early time points postinoculation, indicating that these mutations synergistically enhance safety of the vaccine candidate. Conclusions: These data suggest that restriction of LAV replication in skeletal muscle enhances tolerability of reactogenic vaccine candidates and may improve the rational design of CHIKV vaccines.

Higher risk of COVID-19 infection among internally displaced persons (IDPs) in Myanmar under the military coup.

Sawn Khai T.
Dec-2022
Glob Public Health.
https://pubmed.ncbi.nlm.nih.gov/35042432/

Access to healthcare has been difficult for over a thousand internally displaced people (IPDs) living in camps even before the COVID-19 pandemic surge in Myanmar. Amidst the pandemic crisis, the coup d'etat state power on February 1, 2021, and arbitrary detained all elected officials. Subsequently, over a hundred thousand civilians were displaced from their homes due to the intensified conflict between the military, ethnic armed groups, and people's defence force (PDF). The military attacks on IDP camps, deliberately blockings all humanitarian aid to IDPs, including medical packages and food pack supplies more vulnerable to contracting an infection. Many of IDPs suffer from infectious diseases such as malaria and dengue fever. Some tested COVID-19 positive due to their precarious living conditions, lack of protective resources supplies and lack of access to healthcare. Urgent international community response is needed to halt the military inhumanity action against the people of Myanmar to curb the pandemic outbreak among the IDPs in Myanmar. Access to primary healthcare services is a fundamental human right. No one should be ignored in vaccination in the fight against the global health pandemic because no one will be safe until everyone is safe.

Rage

Histopathological survey of free-ranging neotropical bats with dermatitis.

de Souza Suguiura IM, Bracarense APFL, de Carvalho Ishiuchi GG, Sano A, Branco KS, Itano EN, Ono MA.
09-02-2023
Vet Pathol.
https://pubmed.ncbi.nlm.nih.gov/36757133/

Bats have a fundamental ecological role, and no wildlife disease has decimated more individuals than white-nose syndrome (WNS). This impactful mycosis has raised the importance of monitoring disease threats to bat populations. In this study, we aimed to investigate gross skin lesions in neotropical bats by histopathology to survey the occurrence of dermatitis that could resemble WNS cases in Brazil. Eleven species of free-ranging bats were sampled from the rabies surveillance program in 9 municipalities of Northern Paraná. Members of the Molossidae family were the most frequent ones among the 126 analyzed individuals, and 4 cases of dermatitis in 2 black mastiff bats (*Molossus rufus*), 1 great fruit-eating bat (*Artibeus lituratus*), and a big free-tailed bat (*Nyctinomops macrotis*) were detected. Gross lesions included alopecia, macules, discoloration, and hyperkeratosis. Among the bats with gross lesions, dermal thickening and mild inflammation were observed histologically. Two *M. rufus* bats had dermal fungal invasion; however, none resembled WNS.

Effects of adjuvants in a rabies-vectored Ebola virus vaccine on protection from surrogate challenge.

Yankowski C, Kurup D, Wirblich C, Schnell MJ.
08-02-2023
NPJ Vaccines.
https://pubmed.ncbi.nlm.nih.gov/36754965/

A rabies virus-based toolkit for efficient retrograde labeling and monosynaptic tracing.

Lin KZ, Li L, Ma WY, Yang X, Han ZP, Luo NS, Wang J, Xu FQ.
Aug-2023
Neural Regen Res.
https://pubmed.ncbi.nlm.nih.gov/36751812/

An exploratory study on the perceptions of rabies and ill-health causations and health seeking behaviours of school children and local communities in southern Bhutan.

Lungten L, Tenzin T, Thys S, Phimpraphai W, Rinchen S, de Garine-Wichatitsky M.
07-02-2023
BMC Public Health.
https://pubmed.ncbi.nlm.nih.gov/36750947/

Background: The perception of illness and health-seeking behaviours, including rabies differ from one culture to another. Depending on the cultural setting of the society in which people live, the definition of the causal factors of illness may range from natural biological causes to supernational causes which greatly influence subsequent health-seeking behaviour. To ensure best health practices and plan effective health interventions for the control of dog-mediated-human rabies, we explored how school children and adult communities perceive and respond to illnesses, including rabies in southern Bhutan. Methods: We collected quantitative data related to the causes of illness and health-seeking practices of school children using a questionnaire survey (QS). Qualitative data were collected through focus group discussions (FGDs) and in-depth interviews (IDIs) with older members of communities (≥ 18 years) that work closely with school children. Descriptive analysis was performed for the quantitative data and thematic analysis was performed for the qualitative data. Results: The participants during the FDGsand IDIshave linked the illnesses to past actions, spirits, energy channels, planetary movement, sorcery, black magic, food, physical or environmental factors, individual habits and social factors. The survey of the school children reported microorganisms (75%), past actions (16.8%), spirits (9.6%) and black magic (9.1%) as causal factors for illnesses. Health seeking behaviours reported by the participants included visiting hospitals, performing spiritual or religious rituals and local treatments. Similarly, school children also mentioned that illnesses can be treated by visiting hospitals (98%), performing rituals (59.1%), and seeking traditional treatments practices (18.8%). Both school children and adult members of the communities that we interviewed were well aware on the causes of rabies and need for allopathic treatments rather than seeking spiritual or local treatments. Conclusion: There is a need for the consideration of the socio-cultural context in the planning and implementation of health-related policies, including the rabies prevention programs in Bhutan, by involving traditional healers and religious entities with "One Health" public health sectors.

Rabies, the cause of fatal encephalitis.

Torres-Pérez ME, Reyes-Cortés IB, Romero-Ramos EM, Reyna-Osorio DA, Serrano-Murillo M, Martínez-Manjarrez JA, Kuri-Álvarez A, Arriaga-Ponce JV, Sierra-Díaz E.
02-01-2023
Salud Publica Mex.
https://pubmed.ncbi.nlm.nih.gov/36750077/

South Asian Transplant Infectious Disease Guidelines for Solid Organ Transplant Candidates, Recipients, and Donors.

Bansal SB, Ramasubramanian V, Prasad N, Saraf N, Soman R, Makharia G, Varughese S, Sahay M, Deswal V, Jeloka T, Gang S, Sharma A, Rupali P, Shah DS, Jha V, Kotton CN.
07-02-2023
Transplantation.
https://pubmed.ncbi.nlm.nih.gov/36749281/

These guidelines discuss the epidemiology, screening, diagnosis, posttransplant prophylaxis, monitoring, and management of endemic infections in solid organ transplant (SOT) candidates, recipients, and donors in South Asia. The guidelines also provide recommendations for SOT recipients traveling to this region. These guidelines are based on literature review and expert opinion by transplant physicians, surgeons, and infectious diseases specialists, mostly from South Asian countries (India, Pakistan, Bangladesh, Nepal, and Sri Lanka) as well as transplant experts from other countries. These guidelines cover relevant endemic bacterial infections (tuberculosis, leptospirosis, melioidosis, typhoid, scrub typhus), viral infections (hepatitis A, B, C, D, and E; rabies; and the arboviruses including dengue, chikungunya, Zika, Japanese encephalitis), endemic fungal infections (mucormycosis, histoplasmosis, talaromycosis, sporotrichosis), and endemic parasitic infections (malaria, leishmaniasis, toxoplasmosis, cryptosporidiosis, strongyloidiasis, and filariasis) as well as travelers' diarrhea and vaccination for SOT candidates and recipients including travelers visiting this region. These guidelines are intended to be an overview of each topic; more detailed reviews are being published as a special supplement in the Indian Journal of Transplantation .

The Politics of Breeding: Rabies Prevention and the Shaping of Human-Dog Relations in Modern Japan.

Huang Y.
Dec-2022
Uisahak.

https://pubmed.ncbi.nlm.nih.gov/36746405/

Evaluation of In-House ELISA for Antirabies Antibodies Detection in Domestic Canine.

Fitria Y, Febrianto N, Putri RE, Rahmadani I, Subekti DT.
25-01-2023
Vet Med Int.
https://pubmed.ncbi.nlm.nih.gov/36743706/

Indonesia is known to be endemic for rabies in several areas, especially in Sumatra, Kalimantan, Sulawesi, and Flores Islands. Currently, vaccinating dogs has been shown to be the most cost-effective strategy for preventing rabies in humans. Postvaccination monitoring should be carried out to evaluate the success of vaccination by measuring antibody titers in serum of vaccinated dogs. Serological methods for monitoring rabies-specific antibody titers can be carried out using enzyme-linked immunosorbent assay (ELISA) methods as recommended by the World Organization for Animal Health (WOAH). Therefore, the development of the in-house ELISA (BukTi-Vet) that we have carried out in order to support postvaccination monitoring in dogs needs to be evaluated for its diagnostic performance compared to commercial ELISA kits. The diagnostic performance of each ELISA kit was evaluated using 111 known positive and 47 negative serums. Each known positive and negative serum will be tested using the three rabies ELISA kits used in this study. BukTi-Vet is an in-house ELISA for the detection of rabies-specific IgG antibodies that have been developed with sensitivity, specificity, and accuracy of 98.19%, 97.87%, and 98.1%, respectively. Based on the value of its positive and negative clinical utility index, BukTi-Vet is excellent for use in immunoassays directed for confirmatory (0.97) as well as screening (0.94) tests. BukTi-Vet shows a very good agreement with both Platelia II and RFFIT, so it is convincing to be further refined into a diagnostic kit. Tests of field sera from dogs vaccinated with various vaccines should be performed to provide more complete information on diagnostic performance. BukTi-Vet showed a very good agreement with RFFIT, while Pusvetma and Platelia II only showed good agreement. The average value of BukTi-Vet compatibility with RFFIT can reach 94%.

Evaluation of Our Rabies Prevention Practices: Is Our Approach Correct?

Yıldırım AA, Doğan A, Kurt C, Çetinkol Y.
Sep-2022
Iran J Public Health.
https://pubmed.ncbi.nlm.nih.gov/36743366/

Sharing the Load by One Health: Integrating Canine Rabies Vaccination With Bovine Foot-and-Mouth Vaccination Program and Community Public Health Services in Rural Nilgiris District, Tamil Nadu, India.

Airikkala-Otter I, Fröchlich J, Porkodi S, Gibson A, Gamble L, Rayner E.
Oct-Dec 2022
Indian J Community Med
https://pubmed.ncbi.nlm.nih.gov/36742947/

Background: India carries the largest national burden for rabies globally. Coordinating large-scale canine rabies elimination programs is challenging, particularly in rural areas, where the majority of human rabies deaths occur. This study evaluated the feasibility of combining canine rabies vaccination with pre-existing animal-health interventions or public health programs in a rural area of India. Materials and methods: Canine rabies vaccination teams collaborated with a bi-annual bovine foot-and-mouth vaccination program coordinated by the Animal Husbandry Department (AH-collaboration) and with a village health program by the Public Health Department (PH-collaboration) in Nilgiris, Tamil Nadu, to vaccinate dogs during the implementation of these government-led health initiatives. Results: A total of 251 dogs were vaccinated over 7 days during the AH-collaboration, and 1083 dogs were vaccinated over 15 days during the PH-collaboration. The AH-collaboration achieved a vaccination coverage of 76% based on same-time sighting survey, and 58% based on post-vaccination survey. The PH-collaboration achieved vaccination coverage of 79% based on the same-time survey and 83% based on the post-vaccination survey. Conclusions: The integration of mass dog vaccination into existing government sector initiatives may facilitate the scaling up of canine rabies vaccination campaigns.

An Overview of the History, Pathophysiology, and Pharmacological Interventions of Multiple Sclerosis.

Dighriri IM, Aldalbahi AA, Albeladi F, Tahiri AA, Kinani EM, Almohsen RA, Alamoudi NH, Alanazi AA, Alkhamshi SJ, Althomali NA, Alrubaiei SN, Altowairqi FK.
02-01-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/36733554/

Trachome

Cost and community acceptability of enhanced antibiotic distribution approaches for trachoma in the Republic of South Sudan: enhancing the A in SAFE (ETAS) study protocol.

Sanders AM, Makoy S, Deathe AR, Ohidor S, Jesudason TC, Nute AW, Odongi P, Boniface L, Abuba S, Delahaut AS, Sebit W, Niquette J, Callahan EK, Walker DG, Nash SD.
06-02-2023
BMC Ophthalmol.
https://pubmed.ncbi.nlm.nih.gov/36747194/

Background: The World Health Organization targeted trachoma for global elimination as a public health problem by 2030. Reaching elimination thresholds by the year 2030 in the Republic of South Sudan will be a considerable challenge, as the country currently has many counties considered hyper-endemic (> 30% trachomatous inflammation-follicular [TF]) that have yet to receive interventions. Evidence from randomized trials, modeling,

and population-based surveys suggests that enhancements may be needed to the standard-of-care annual mass drug administration (MDA) to reach elimination thresholds in a timely manner within highly endemic areas. We describe a protocol for a study to determine the cost and community acceptability of enhanced antibiotic strategies for trachoma in South Sudan. **Methods:** The Enhancing the A in SAFE (ETAS) study is a community randomized intervention costing and community acceptability study. Following a population-based trachoma prevalence survey in 1 county, 30 communities will be randomized 1:1 to receive 1 of 2 enhanced MDA interventions, with the remaining communities receiving standard-of-care annual MDA. The first intervention strategy will consist of a community-wide MDA followed by 2 rounds of targeted treatment to children ages 6 months to 9 years, 2 weeks and 4 weeks after the community MDA. The second strategy will consist of a community-wide biannual MDA approximately 6 to 8 months apart. The costing analysis will use a payer perspective and identify the total cost of the enhanced interventions and annual MDA. Community acceptability will be assessed through MDA coverage monitoring and mixed-methods research involving community stakeholders. A second trachoma-specific survey will be conducted 12 months following the original survey. **Discussion:** ETAS has received ethical clearance and is expected to be conducted between 2022 and 2023. Results will be shared through subsequent manuscripts. The study's results will provide information to trachoma programs on whether enhanced interventions are affordable and acceptable to communities. These results will further help in the design of future trachoma-specific antibiotic efficacy trials. Enhanced MDA approaches could help countries recover from delays caused by conflict or humanitarian emergencies and could also assist countries such as South Sudan in reaching trachoma elimination as a public health problem by 2030.

Active Trachoma Prevalence and Related Variables among Children in a Pastoralist Community in Southern Ethiopia in 2021: A Community-Based Cross-Sectional Study.

Tuke D, Etu E, Shalemo E.
09-01-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36623488/

An estimated 30% of trachoma burden is borne by Ethiopia. Data on the prevalence of active trachoma and related factors in a pastoralist population are currently lacking. Additionally, no research has been conducted in the Oromia, Guji Zone of the Liben District. A community-based cross-sectional study was conducted among 538 children 1-9 years old in the pastoralist community of the Liben District from March 1 to April 30, 2021. A multistage systematic sampling method was applied to choose the sample. A structured questionnaire and WHO's trachoma grading scheme were used to identify active trachoma. Bivariate and multivariable logistic regression models were fitted to determine associated factors. An adjusted odds ratio with 95% confidence interval was calculated to decide the level of significance: 157 (29.2%) (95% CI: 24.9, 33.1) of children had clinical signs of active trachoma, 103 (66%) had trachomatous follicles, 41 (26%) had trachomatous intense, and 13 (8%) had both. There was an independent relationship between active trachoma and open defecation (adjusted odds ratio [AOR]: 2.75; 95% CI: 1.24, 6.09), defecating outside close to a house (AOR: 2.5; 95% CI: 1.07, 6.08), not having a latrine (AOR: 3.70; 95% CI: 1.60, 8.60), children who did not wash their faces with soap (AOR: 1.85; 95% CI: 1.10, 3.07), and being in a widowed household (AOR: 3.26; 95% CI: 1.57, 6.63). The study's findings revealed that about one-third of the children had clinical signs of trachoma. Research indicates that trachoma is a major concern for children in rural communities. Therefore, attention to trachoma control with antibiotics, facial hygiene, and environmental sanitation is strongly encouraged.

Prevalence of Ocular Chlamydia trachomatis Infection in Amhara Region, Ethiopia, after 8 Years of Trachoma Control Interventions.

D Nash S, Chernet A, Weiss P, W Nute A, Zerihun M, Sata E, Gessese D, A Jensen K, Ayele Z, Melak B, Zeru T, Mengistu A, Abebe A, Seife F, Tadesse Z, Callahan EK.
09-01-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36623484/

Trachoma Control: A Glass Half Full?

Bilchut AH, Burroughs HR, Oldenburg CE, Lietman TM.
09-01-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36623481/

Sequence based HLA-DRB1, -DQB1 and -DPB1 allele and haplotype frequencies in The Gambia.

Barton A, Pickering H, Payne T, Faal N, Sillah A, Harte A, Bailey RL, Mabey DCW, Roberts CH, Holland MJ.
Feb-2023
Hum Immunol.
https://pubmed.ncbi.nlm.nih.gov/36335053/

Class II HLA loci DRB1, DQB1 and DPB1 were typed for a total of 939 Gambian participants by locus-specific amplicon sequencing. Participants were from multiple regions of The Gambia and drawn from two studies: a family study aiming to identify associations between host genotype and trachomatous scarring (N = 796) and a cohort study aiming to identify correlates of immunity to trachoma (N = 143). All loci deviated from Hardy-Weinberg equilibrium, likely due to the family-based nature of the study: 608 participants had at least one other family member included in the study population. The most common alleles for HLA-DRB1, DQB1 and DPB1 respectively were DRB1*13:04 (18.8 %), DQB1*03:19 (27.9 %) and DPB1*01:01 (25.4 %). Participants belonged to a variety of ethnicities, including the Mandinka, Fula, Wolof and Jola ethnic groups.

Ulcère de Buruli

Identifying Hot Spots of Tuberculosis in Nigeria Using an Early Warning Outbreak Recognition System: Retrospective Analysis of Implications for Active Case Finding Interventions.

Ogbudebe C, Jeong D, Odume B, Chukwuogo O, Dim C, Useni S, Okuzu O, Malolan C, Kim D, Nwariaku F, Nwokoye N, Gande S, Nongo D, Eneogu R, Odusote T, Oyelaran S, Chijioke-Akaniro O, Nihalani N, Anyaike C, Gidado M.
08-02-2023
JMIR Public Health Surveill.
https://pubmed.ncbi.nlm.nih.gov/36753328/

Background: Undiagnosed tuberculosis (TB) cases are the major challenge to TB control in Nigeria. An early warning outbreak recognition system (EWORS) is a system that is primarily used to detect infectious disease outbreaks; this system can be used as a case-based geospatial tool for the real-time identification of hot spot areas with clusters of TB patients. TB screening targeted at such hot spots should yield more TB cases than screening targeted at non-hot spots. Objective: We aimed to demonstrate the effectiveness of an EWORS for TB hot spot mapping as a tool for detecting areas with increased TB case yields in high TB-burden states of Nigeria. Methods: KNCV Tuberculosis Foundation Nigeria deployed an EWORS to 14 high-burden states in Nigeria. The system used an advanced surveillance mechanism to identify TB patients' residences in clusters, enabling it to predict areas with elevated disease spread (ie, hot spots) at the ward level. TB screening outreach using the World Health Organization 4-symptom screening method was conducted in 121 hot spot wards and 213 non-hot spot wards selected from the same communities. Presumptive cases identified were evaluated for TB using the GeneXpert instrument or chest X-ray. Confirmed TB cases from both areas were linked to treatment. Data from the hot spot and non-hot spot wards were analyzed retrospectively for this study. Results: During the 16-month intervention, a total of 1,962,042 persons (n=734,384, 37.4% male, n=1,227,658, 62.6% female) and 2,025,286 persons (n=701,103, 34.6% male, n=1,324,183, 65.4% female) participated in the community TB screening outreaches in the hot spot and non-hot spot areas, respectively. Presumptive cases among all patients screened were 268,264 (N=3,987,328, 6.7%) and confirmed TB cases were 22,618 (N=222,270, 10.1%). The number needed to screen to diagnose a TB case in the hot spot and non-hot spot areas was 146 and 193 per 10,000 people, respectively. Conclusions: Active TB case finding in EWORS-mapped hot spot areas yielded higher TB cases than the non-hot spot areas in the 14 high-burden states of Nigeria. With the application of EWORS, the precision of diagnosing TB among presumptive cases increased from 0.077 to 0.103, and the number of presumptive cases needed to diagnose a TB case decreased from 14.047 to 10.255 per 10,000 people.

Pian

Conformity of yaws clinical features to combined rapid diagnostic test in children aged 2-15 years in an endemic area.

Menaldi SLS, Natasha J, Saputra J, Marissa M, Irawan Y, Friska D, Wahyudi DT.
31-12-2022
J Infect Dev Ctries.
https://pubmed.ncbi.nlm.nih.gov/36753660/

Introduction: The diagnosis of yaws is established by clinical examination and confirmed through a laboratory test. Unrecognized lesions may lead to a missed opportunity for diagnosis and complete eradication of yaws. The use of Dual Path Platform (DPP® RDT) Syphilis Screen and Confirm RDT (Chembio, Medford, New York) has been recommended by the World Health Organization (WHO) for endemic areas with limited laboratory facilities. To date, there have not been any studies assessing the conformity of clinical features based on the WHO guidelines with DPP® RDT. Methodology: A cross-sectional study was conducted to evaluate the conformity of yaws clinical features based on the WHO guidelines to the DPP® RDT. We recruited children aged 2-15 years old in Alor, Indonesia. All subjects underwent clinical examination and were tested with DPP® RDT. Fisher's exact test was used to analyze the overall agreement between the clinical features and the DPP® RDT results. Results: A total of 197 study subjects (mean age 9 years) were enrolled. The most frequent skin lesion was a yaws scar (79.7%). Eight subjects (3%) were diagnosed with yaws based on the DPP® RDT examination. The overall agreement between clinical features and DPP® RDT was 26.9% (p = 0.202). Conclusions: The conformity of clinical features in suspected yaws to DPP® RDT is low; thus, clinical features should not be used as a sole initial reference in establishing yaws diagnosis, even in endemic areas.

Finding Yaws among Indigenous People: Lessons from Case Detection Surveys in Luzon and Visayas Island Groups of the Philippines.

Dofitas B, Batac MC, Richardus JH.
26-12-2022
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36572006/

Introduction: The diagnosis of yaws is established by clinical examination and confirmed through a laboratory test. Unrecognized lesions may lead to a missed opportunity for diagnosis and complete eradication of yaws. The use of Dual Path Platform (DPP® RDT) Syphilis Screen and Confirm RDT (Chembio, Medford, New York) has been recommended by the World Health Organization (WHO) for endemic areas with limited laboratory facilities. To date, there have not been any studies assessing the conformity of clinical features based on the WHO guidelines with DPP® RDT. Methodology: A cross-sectional study was conducted to evaluate the conformity of yaws clinical features based on the WHO guidelines to the DPP®

RDT. We recruited children aged 2-15 years old in Alor, Indonesia. All subjects underwent clinical examination and were tested with DPP® RDT. Fisher's exact test was used to analyze the overall agreement between the clinical features and the DPP® RDT results. **Results:** A total of 197 study subjects (mean age 9 years) were enrolled. The most frequent skin lesion was a yaws scar (79.7%). Eight subjects (3%) were diagnosed with yaws based on the DPP® RDT examination. The overall agreement between clinical features and DPP® RDT was 26.9% (p = 0.202). **Conclusions:** The conformity of clinical features in suspected yaws to DPP® RDT is low; thus, clinical features should not be used as a sole initial reference in establishing yaws diagnosis, even in endemic areas.

Lèpre

In-vitro detection of suspected drug in maculopapular drug reaction to antibiotics using secreted cytokines from drug-specific activated T cells.

Dharanisankar S, Chandrashekar L, Selvarajan S, Rajappa M, Ramassamy S.
09-02-2023
Clin Exp Dermatol.
https://pubmed.ncbi.nlm.nih.gov/36755422/

Background: Maculopapular drug eruptions (MPE) to antibiotics are associated with enhanced expression of Th1 cytokines like IFN gamma or Th2 cytokines like IL-5. Identifying the culprit drug usually involves re-challenge, which may not be forthcoming. Memory lymphocytes remain responsive to the culprit drug long after the reaction has resolved. Upon reactivation in-vitro, there is increased proliferation and expression of certain markers which provides us with an opportunity to predict the causal drug. **Objective:** The study aimed to assess drug-specific cytokine production (IL-5 and IFN-gamma) in peripheral blood mononuclear cell culture supernatants to predict the causal the antibiotic in maculopapular drug eruptions. **Methods:** Peripheral blood mononuclear cells of 20 patients who developed MPE to various antibiotics and 11 drug-matched healthy controls were incubated for five days with the respective drugs at two different concentrations. Cytokines secreted were measured in the supernatants at 6 hours, day 2 and day 5 using enzyme-linked immunosorbent assay (ELISA) for IL-5 and IFN-gamma. **Results:** Drug-specific IL-5 and IFN-gamma production could be demonstrated in 65% and 73.6% of the cases, respectively. Maximal secretion of IL-5 and IFN-gamma were observed on day 5 and day 2 of incubation, respectively. The cut-off Delta values, which are the difference in cytokine concentration of the drug-stimulated and unstimulated samples, were 4 pg/ml and 6 pg/ml for IL-5 and IFN-gamma, respectively. **Conclusion:** The measurement of drug-specific secretion of IL-5 and IFN-gamma using ELISA is a valuable method for detecting antibiotic-induced maculopapular exanthema.

Prevalence of post kala-azar dermal leishmaniasis (PKDL) and treatment seeking behavior of PKDL patients in Nepal.

Joshi AB, Banjara MR, Das ML, Ghale P, Pant KR, Parajuli N, Pyakurel UR, Dahal GR, Das CL, Kroeger A, Aseffa A.
09-02-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/36758102/

Evolution of pediatric pharmaceutical forms for treatment of Hansen's disease (leprosy).

da Silva Santos J, da Costa Alves F, José Dos Santos Júnior E, Soares Sobrinho JL, de La Roca Soares MF.
08-02-2023
Expert Opin Ther Pat.
https://pubmed.ncbi.nlm.nih.gov/36755421/

Identifying Hot Spots of Tuberculosis in Nigeria Using an Early Warning Outbreak Recognition System: Retrospective Analysis of Implications for Active Case Finding Interventions.

Ogbudebe C, Jeong D, Odume B, Chukwuogo O, Dim C, Useni S, Okuzu O, Malolan C, Kim D, Nwariaku F, Nwokoye N, Gande S, Nongo D, Eneogu R, Odusote T, Oyelaran S, Chijioke-Akaniro O, Nihalani N, Anyaike C, Gidado M.
08-02-2023
JMIR Public Health Surveill.
https://pubmed.ncbi.nlm.nih.gov/36753328/

Background: Undiagnosed tuberculosis (TB) cases are the major challenge to TB control in Nigeria. An early warning outbreak recognition system (EWORS) is a system that is primarily used to detect infectious disease outbreaks; this system can be used as a case-based geospatial tool for the real-time identification of hot spot areas with clusters of TB patients. TB screening targeted at such hot spots should yield more TB cases than screening targeted at non-hot spots. **Objective:** We aimed to demonstrate the effectiveness of an EWORS for TB hot spot mapping as a tool for detecting areas with increased TB case yields in high TB-burden states of Nigeria. **Methods:** KNCV Tuberculosis Foundation Nigeria deployed an EWORS to 14 high-burden states in Nigeria. The system used an advanced surveillance mechanism to identify TB patients' residences in clusters, enabling it to predict areas with elevated disease spread (ie, hot spots) at the ward level. TB screening outreach using the World Health Organization 4-symptom screening method was conducted in 121 hot spot wards and 213 non-hot spot wards selected from the same communities. Presumptive cases identified were evaluated for TB using the GeneXpert instrument or chest X-ray. Confirmed TB cases from both areas were linked to treatment. Data from the hot spot and non-hot spot wards were analyzed retrospectively for this study. **Results:** During the 16-month intervention, a total of 1,962,042 persons (n=734,384, 37.4% male, n=1,227,658, 62.6% female) and 2,025,286 persons (n=701,103, 34.6% male, n=1,324,183, 65.4% female) participated in the community TB screening outreaches in the hot spot and non-hot spot areas,

respectively. Presumptive cases among all patients screened were 268,264 (N=3,987,328, 6.7%) and confirmed TB cases were 22,618 (N=222,270, 10.1%). The number needed to screen to diagnose a TB case in the hot spot and non-hot spot areas was 146 and 193 per 10,000 people, respectively. Conclusions: Active TB case finding in EWORS-mapped hot spot areas yielded higher TB cases than the non-hot spot areas in the 14 high-burden states of Nigeria. With the application of EWORS, the precision of diagnosing TB among presumptive cases increased from 0.077 to 0.103, and the number of presumptive cases needed to diagnose a TB case decreased from 14.047 to 10.255 per 10,000 people.

Determinants of tuberculosis treatment success among the working population in Malaysia.

Muzaini K, Yasin SM, Ismail N, Abdul Rani MF, Ismail AI, Razali A, Makeswaran P.
31-01-2023
Singapore Med J.
https://pubmed.ncbi.nlm.nih.gov/36751842/

Global leprosy scenario: Eradication, elimination or control?

Gupte M.
08-02-2023
Indian J Med Res.
https://pubmed.ncbi.nlm.nih.gov/36751754/

Barriers to childhood tuberculosis case detection and management in Cambodia: the perspectives of healthcare providers and caregivers.

An Y, Teo AKJ, Huot CY, Tieng S, Khun KE, Pheng SH, Leng C, Deng S, Song N, Nonaka D, Yi S.
07-02-2023
BMJ Case Rep.
https://pubmed.ncbi.nlm.nih.gov/36750767/

Background: Diagnosis and treatment of tuberculosis (TB) in children remain challenging, particularly in resource-limited settings. Healthcare providers and caregivers are critical in improving childhood TB screening and treatment. This study aimed to determine the barriers to childhood TB detection and management from the perspectives of healthcare providers and caregivers in Cambodia. Method: We conducted this qualitative study between November and December 2020. Data collection included in-depth interviews with 16 healthcare providers purposively selected from four operational districts and 28 caregivers of children with TB and children in close contact with bacteriologically confirmed pulmonary TB residing in the catchment areas of the selected health centers. Data were analyzed using thematic analyses. Results: Mean ages of healthcare providers and caregivers were 40.2 years (standard deviation [SD] 11.9) and 47.9 years (SD 14.6), respectively. Male was predominant among healthcare providers (93.8%). Three-fourths of caregivers were female, and 28.6% were grandparents. Inadequate TB staff, limited knowledge on childhood TB, poor collaboration among healthcare providers in different units on TB screening and management, limited quality of TB diagnostic tools, and interruption of supplies of childhood TB medicines due to maldistribution from higher levels to health facilities were the key barriers to childhood TB case detection and management. Caregivers reported transportation costs to and from health facilities, out-of-pocket expenditure, time-consuming, and no clear explanation from healthcare providers as barriers to childhood TB care-seeking. Aging caregivers with poor physical conditions, lack of collaboration from caregivers, ignorance of healthcare provider's advice, and parent movement were also identified as barriers to childhood TB case detection and management. Conclusions: The national TB program should further invest in staff development for TB, scale-up appropriate TB diagnostic tools and ensure its functionalities, such as rapid molecular diagnostic systems and X-ray machines, and strengthen childhood TB drug management at all levels. These may include drug forecasting, precise drug distribution and monitoring mechanism, and increasing community awareness about TB to increase community engagement.

Clinical, dermoscopic, radiological and histopathological features of dermatofibrosarcoma protuberans.

Adya KA, Panchagavi AB, Thrupthi AL, Inamadar A.
07-02-2023
BMJ Case Rep.
https://pubmed.ncbi.nlm.nih.gov/36750297/

Evaluation of Senna tora (L.) Roxb. leaves as source of bioactive molecules with antioxidant, anti-inflammatory and antibacterial potential.

Rahman MM, Al Noman MA, Khatun S, Alam R, Shetu MMH, Talukder EK, Imon RR, Biswas MY, Anis-Ul-Haque KM, Uddin MJ, Akhter S.
19-01-2023
Heliyon.
https://pubmed.ncbi.nlm.nih.gov/36747926/

Senna tora (L.) Roxb. is an ethno-medicinal herb used by rural and tribal people of the Satpura region of Madhya Pradesh in India and the Phatthalung Province of Thailand for treating rheumatism, bronchitis, ringworm, itches, leprosy, dyspepsia, liver disorders and heart disorders. It is also used in Chinese and Ayurvedic medicine. This study was conducted to investigate the potential of *Senna tora* (L.) Roxb. as a source of drug candidates against oxidants, inflammation, and bacterial infection. Preliminary phytochemical screening (PPS) and GC-MS were performed to identify the phytochemicals in the ethyl acetate extract of *Senna tora* (L.) Roxb. leaves (EAESTL). The *in vitro* antioxidant activity was assessed by 2,2-diphenyl-1-picrylhydrazyl (DPPH)- and H_2O_2-scavenging tests; the *in vitro* anti-inflammatory activity was determined by bovine serum albumin (BSA) denaturation and red blood cell (RBC) hemolysis inhibition; and the antibacterial activity was evaluated by agar-well diffusion methods. Cytotoxicity was estimated by *Artemia salina* larvae lethality, while acute toxicity was evaluated by oral

delivery of the extract to mice. *In silico* antioxidant, anti-inflammatory, and antibacterial activities were predicted by the Prediction of Activity Spectra for Substances (PASS) program. The pharmacokinetics related to ADME and toxicity tests were determined by the admetSAR2 and ADMETlab2 web servers, and drug-able properties were assessed by the SwissADME server. GC-MS detected fifty-nine phytochemicals that support the types of compounds (phenols, flavonoids, tannins, terpenoids, saponins, steroids, alkaloids, glycosides and reducing sugar) identified by phytochemical screening. EAESTL exhibited dose-dependent antioxidant, anti-inflammatory, and antibacterial activities without any adverse effects or fluctuations in body weight. The PASS program predicted that the identified phytochemicals have antioxidant, anti-inflammatory and antibacterial activities. Among 51 phytochemicals, 16 showed good ADME, and 8 fulfilled drug-able properties without toxicity. Altogether, four phytochemicals, viz., benzyl alcohol, 3-(hydroxy-phenyl-methyl)-2,3-dimethyl-octan-4-one, phenylethyl alcohol and 2,6,6-trimethylbicyclo [3.1.1] heptane-3-ol, showed good pharmacokinetics and drug-able properties without toxicity, along with antioxidant, anti-inflammatory, and antibacterial activities. The obtained results suggest that *Senna tora* (L.) Roxb. leaves contain bioactive phytochemicals that have the potential to fight against oxidants, inflammation, and bacterial infection as potential drug candidates.

Severe beginning of the end (BOTE) sign in molluscum contagiosum after initiation of antiretroviral therapy in an AIDS patient: A possible immune reconstitution inflammatory syndrome manifestation!

Mittal R, Sandhu JK, Singh B.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS
https://pubmed.ncbi.nlm.nih.gov/36743109/

Syphilis in the era of re-emergence: A 6-year retrospective study from a tertiary care center in South India.

Jeevanandham P, Ambooken B, Asokan N, Salam SA, Venugopal R.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS
https://pubmed.ncbi.nlm.nih.gov/36743103/

Background: During the last several years, we have observed a rise in the number of patients with syphilis in our center. Aims: To find out the trends in the presentation of syphilis to our clinic over a 6-year period and to analyze the clinicoepidemiological features of those patients. Settings and design: A retrospective chart review. Subjects and methods: We analyzed the case records of all cases of syphilis registered in our sexually transmitted infection (STI) clinic from October 1, 2012, to September 30, 2018. Syphilis was diagnosed based on clinical or serological evidence. We also evaluated these patients for any concomitant STI, including hepatitis B, hepatitis C, and HIV. Statistical analysis used: The data were analyzed using SPSS software (version 20). Chi-square test was done for comparing categorical data, and $P < 0.05$ was considered statistically significant. Results: During the study period, 215 patients with STI attended our clinic. Of these, 66 (31%) patients had acquired syphilis. Among them, 3 (4.5%) had primary syphilis, 23 (34.8%) had secondary syphilis, and 40 (60.6%) had latent syphilis. Fifteen (22.7%) patients had concomitant HIV infection. A statistically significant rise in the number of cases of syphilis compared with other STIs was noted in the latter half of the study period ($P = 0.001$). Among the 50 males with acquired syphilis, 29 (58%) were men having sex with men (MSM), including 19 bisexual persons. Among the five antenatal cases, two were detected very late in pregnancy. Conclusions: We observed a marked increase in the number of cases of syphilis during the latter half of the study period. Primary and secondary syphilis were more frequent among MSM, suggesting a need to strengthen targeted intervention programs among them. More rigorous antenatal screening is necessary to prevent congenital syphilis.

Crusted scabies in AIDS patient, a clinical challenge to be sorted out with a simple bedside test.

Indira B, Darsan S.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS
https://pubmed.ncbi.nlm.nih.gov/36743101/

Norwegian or crusted scabies is a highly contagious severe variant of scabies described first among leprosy patients in Norway in 1848 by Boeck and Danielsen. Herein, we report a case of crusted scabies in an AIDS patient with large hyperpigmented macules covered with thick crusts present over the axilla, inguinal region, and gluteal region. Treatment started immediately with ivermectin, permethrin, and keratolytics after doing KOH microscopy. Mite population may exceed 1 million/person. Hence, it is highly infectious and can set off epidemics of scabies in home or institutions.

Erythema nodosum leprosum with genital ulceration - A rare and interesting case report.

Rupan A, Sivanu S, Nirmaladevi P.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS
https://pubmed.ncbi.nlm.nih.gov/36743099/

Prozone phenomenon in secondary syphilis with HIV co-infection: Two cases.

Awake P, Angadi K, Sen S, Bhadange P.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS
https://pubmed.ncbi.nlm.nih.gov/36743087/

Prozone phenomenon is defined as a false-negative response resulting from higher antibody titer which interferes with formation of antigen-antibody lattice, necessary to visualize a positive flocculation test. The

prozone effect can be observed in syphilis testing with cases of very high antibody titers, such as secondary syphilis, or with human immunodeficiency virus (HIV) co-infection. We report two cases of prozone phenomenon in secondary syphilis with HIV co-infection who initially tested nonreactive for rapid plasma reagin test but tested positive with further higher dilution.

Kaposi's sarcoma: An interesting case report in a human immunodeficiency virus-positive heterosexual male.

Reddy HK, Raju BP, Methre V, Samagani A.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS
https://pubmed.ncbi.nlm.nih.gov/36743084/

Emerging trends in sexually transmitted diseases in a tertiary care center in Davangere, Karnataka: A five year study.

Anirudh M, Sugareddy, Sivuni A, Rajashekhar N, Mangala HC.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS
https://pubmed.ncbi.nlm.nih.gov/36743083/

Background: Sexually transmitted diseases (STDs) are a public health challenge, and the epidemiological profile is variable by geographical region and distinct from that of other diseases. Accurate knowledge of emerging disease trends is crucial for formulating effective control strategies. Aims and objectives: The aim and objective of this study were to identify the changing scenario and emerging trends of STDs in Davangere, Karnataka, by evaluating patients attending a tertiary care center. Materials and methods: A tertiary care-based retrospective study was conducted by analyzing the clinical records of the attendees presenting to the STD clinic at Chigateri General Hospital affiliated to JJM Medical College in Davangere, Karnataka, for a period of 5 years from January 2015 to December 2019. The collected data were analyzed and statistically compared with other studies. Results: Out of the 614 patients studied, the male-to-female ratio was 2:1, with 30-39 age groups being most affected. Eighty-eight percent of patients were married, with 36.64% giving a history of extramarital contact. Homosexual and bisexual contacts were observed to be 5.21% and 0.65%, respectively. Viral STDs affected nearly half of the patients (49.51%), followed by fungal (28.88%), bacterial (22.63%), and others (3.1%). The most common STD observed was herpes genitalis as seen in 101 (24.48%) patients, followed by candidal balanoposthitis (17.1%). Thirty-three (5.7%) patients were diagnosed with more than one STD. Of these patients, 13 were seropositive for HIV, resulting in a prevalence of 2.12%. Conclusion: The epidemiological profile of STDs is ever changing, and this study found an increase in viral and fungal STDs and downward trend of bacterial STDs comparable to that of studies from other regions.

An inscrutable entity: A case report of late congenital syphilis.

Rathwa PK, Chauhan J, Patel NP, Shah H, Vara NV.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS.
https://pubmed.ncbi.nlm.nih.gov/36743077/

Viral co-infections in leprosy: a scoping review.

Fróes LAR Jr, Toma TS, Poderoso RE, Trindade MÂB.
03-01-2023
Int J Dermatol.
https://pubmed.ncbi.nlm.nih.gov/36738114/

Trace element zinc and skin disorders.

Zou P, Du Y, Yang C, Cao Y.
17-01-2023
Front Med (Lausanne).
https://pubmed.ncbi.nlm.nih.gov/36733937/

Zinc is a necessary trace element and an important constituent of proteins and other biological molecules. It has many biological functions, including antioxidant, skin and mucous membrane integrity maintenance, and the promotion of various enzymatic and transcriptional responses. The skin contains the third most zinc in the organism. Zinc deficiency can lead to a range of skin diseases. Except for acrodermatitis enteropathic, a rare genetic zinc deficiency, it has also been reported in other diseases. In recent years, zinc supplementation has been widely used for various skin conditions, including infectious diseases (viral warts, genital herpes, cutaneous leishmaniasis, leprosy), inflammatory diseases (hidradenitis suppurativa, acne vulgaris, rosacea, eczematous dermatitis, seborrheic dermatitis, psoriasis, Behcet's disease, oral lichen planus), pigmentary diseases (vitiligo, melasma), tumor-associated diseases (basal cell carcinoma), endocrine and metabolic diseases (necrolytic migratory erythema, necrolytic acral erythema), hair diseases (alopecia), and so on. We reviewed the literature on zinc application in dermatology to provide references for better use.

Silent peripheral neuropathy determined by high-resolution ultrasound among contacts of patients with Hansen's disease.

Voltan G, Marques-Júnior W, Santana JM, Lincoln Silva CM, Leite MN, De Paula NA, Bernardes Filho F, Barreto JG, Da Silva MB, Conde G, Salgado CG, Frade MAC.
17-01-2023
Front Med (Lausanne).
https://pubmed.ncbi.nlm.nih.gov/36733931/

Giant acquired digital fibrokeratoma.

Inamadar A, Mutalik S.
02-02-2023
BMJ Case Rep.
https://pubmed.ncbi.nlm.nih.gov/36731948/

A dance that paves the way for diagnosis.

Sachan S, Shukla P, Agrawal T, Kumar S, Malhotra KP, Suvirya S.

02-02-2023
Clin Exp Dermatol.
https://pubmed.ncbi.nlm.nih.gov/36730503/

Impact of nanoparticles on amyloid β-induced Alzheimer's disease, tuberculosis, leprosy and cancer: a systematic review.

Chakraborty A, Mohapatra SS, Barik S, Roy I, Gupta B, Biswas A.
27-02-2023
Biosci Rep.
https://pubmed.ncbi.nlm.nih.gov/36630532/

Nanotechnology is an interdisciplinary domain of science, technology and engineering that deals with nano-sized materials/particles. Usually, the size of nanoparticles lies between 1 and 100 nm. Due to their small size and large surface area-to-volume ratio, nanoparticles exhibit high reactivity, greater stability and adsorption capacity. These important physicochemical properties attract scientific community to utilize them in biomedical field. Various types of nanoparticles (inorganic and organic) have broad applications in medical field ranging from imaging to gene therapy. These are also effective drug carriers. In recent times, nanoparticles are utilized to circumvent different treatment limitations. For example, the ability of nanoparticles to cross the blood-brain barrier and having a certain degree of specificity towards amyloid deposits makes themselves important candidates for the treatment of Alzheimer's disease. Furthermore, nanotechnology has been used extensively to overcome several pertinent issues like drug-resistance phenomenon, side effects of conventional drugs and targeted drug delivery issue in leprosy, tuberculosis and cancer. Thus, in this review, the application of different nanoparticles for the treatment of these four important diseases (Alzheimer's disease, tuberculosis, leprosy and cancer) as well as for the effective delivery of drugs used in these diseases has been presented systematically. Although nanoformulations have many advantages over traditional therapeutics for treating these diseases, nanotoxicity is a major concern that has been discussed subsequently. Lastly, we have presented the promising future prospective of nanoparticles as alternative therapeutics. In that section, we have discussed about the futuristic approach(es) that could provide promising candidate(s) for the treatment of these four diseases.

Performance of the Health System Network in Formosa, Argentina, in the Diagnosis of Leprosy.

Arnaiz MR, Abarca DT, Santini MS, Franco JI, Arzamendia L, Recalde HC, Bruzzone OA.
09-01-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36623487/

Case Report: Lepromatous Leprosy and Psoriasis: An Uncommon Coincidence.

Li J, Fu X, Sun L, Xue X, Liu H, Zhang F.
26-12-2022
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36572011/

Leprosy, a chronic infectious disease, and psoriasis, an inflammatory disorder, are distinct entities. Epidemiology data show that these two diseases are almost mutually exclusive, with only a few reported cases of their coexistence. Here, we present the case of a patient manifesting intermingled psoriatic and leprosy lesions diagnosed as borderline lepromatous leprosy and plaque psoriasis. Of note, Mycobacterium leprae bacilli were detected not only in the two types of lesions but also in normal-appearing skin and blood.

Trypanosomes (trypanosomiase et maladie de Chagas)

Modeling the impact of xenointoxication in dogs to halt Trypanosoma cruzi transmission.

Rokhsar JL, Raynor B, Sheen J, Goldstein ND, Levy MZ, Castillo-Neyra R.
25-01-2023
medRxiv.
https://pubmed.ncbi.nlm.nih.gov/36747723/

Background: Chagas disease, a vector-borne parasitic disease caused by *Trypanosoma cruzi* , affects millions in the Americas. Dogs are important reservoirs of the parasite. Under laboratory conditions, canine treatment with the systemic insecticide fluralaner demonstrated efficacy in killing *Triatoma infestans* and *T. brasiliensis, T. cruzi* vectors, when they feed on dogs. This form of pest control is called xenointoxication. However, *T. cruzi* can also be transmitted orally when mammals ingest infected bugs, so there is potential for dogs to become infected upon consuming infected bugs killed by the treatment. Xenointoxication thereby has two contrasting effects on dogs: decreasing the number of insects feeding on the dogs but increasing opportunities for exposure to *T. cruzi* via oral transmission to dogs ingesting infected insects. Objective: Examine the potential for increased infection rates of *T. cruzi* in dogs following xenointoxication. Design/methods: We built a deterministic mathematical model, based on the Ross-MacDonald malaria model, to investigate the net effect of fluralaner treatment on the prevalence of *T. cruzi* infection in dogs in different epidemiologic scenarios. We drew upon published data on the change in percentage of bugs killed that fed on treated dogs over days post treatment. Parameters were adjusted to mimic three scenarios of *T. cruzi* transmission: high and low disease prevalence and domestic vectors, and low disease prevalence and sylvatic vectors. Results: In regions with high endemic disease prevalence in dogs and domestic vectors, prevalence of infected dogs initially increases but subsequently declines before eventually rising back to the initial equilibrium following one fluralaner treatment. In regions of low prevalence and domestic or sylvatic vectors, however, treatment seems to be detrimental. In these regions our models suggest a potential for a rise in dog prevalence, due to oral

transmission from dead infected bugs. **Conclusion:** Xenointoxication could be a beneficial and novel One Health intervention in regions with high prevalence of *T. cruzi* and domestic vectors. In regions with low prevalence and domestic or sylvatic vectors, there is potential harm. Field trials should be carefully designed to closely follow treated dogs and include early stopping rules if incidence among treated dogs exceeds that of controls. **Author summary:** Chagas disease, caused by the parasite *Trypanosoma cruzi* , is transmitted via triatomine insect vectors. In Latin America, dogs are a common feeding source for triatomine vectors and subsequently an important reservoir of *T. cruzi* . One proposed intervention to reduce *T. cruzi* transmission is xenointoxication: treating dogs with oral insecticide to kill triatomine vectors in order to decrease overall *T. cruzi* transmission. Fluralaner, commonly administered to prevent ectoparasites such as fleas and ticks, is effective under laboratory conditions against the triatomine vectors. One concern with fluralaner treatment is that rapid death of the insect vectors may make the insects more available to oral ingestion by dogs; a more effective transmission pathway than stercorarian, the usual route for *T. cruzi* transmission. Using a mathematical model, we explored 3 different epidemiologic scenarios: high prevalence endemic disease within a domestic *T. cruzi* cycle, low prevalence endemic disease within a domestic *T. cruzi* cycle, and low prevalence endemic disease within a semi-sylvatic *T. cruzi* cycle. We found a range of beneficial to detrimental effects of fluralaner xenointoxication depending on the epidemiologic scenario. Our results suggest that careful field trials should be designed and carried out before wide scale implementation of fluralaner xenointoxication to reduce *T. cruzi* transmission.

Expression kinetics of cytokines and the humoral antibody response concerning short-term protection induced by radiation-attenuated Trypanosoma evansi in bovine calves.

Jawalagatti V, Kirthika P, Singh P, Vinodhkumar OR, Buddhi Chandrasekaran S, Chittlangia RK, Tewari AK.
04-02-2023
Vaccine.
https://pubmed.ncbi.nlm.nih.gov/36746738/

Trypanosoma cruzi infection diagnosed in dogs in nonendemic areas and results from a survey suggest a need for increased Chagas disease awareness in North America.

Gavic EA, Achen SE, Fox PR, Benjamin EJ, Goodwin J, Gunasekaran T, Schober KE, Tjostheim SS, Vickers J, Ward JL, Russell DS, Rishniw M, Hamer SA, Saunders AB.
02-02-2023
J Am Vet Med Assoc.
https://pubmed.ncbi.nlm.nih.gov/36735504/

Health work and skills in the last mile of disease elimination. Experiences from sleeping sickness health workers in South Sudan and DR Congo.

Falisse JB, Mpanya A, Surur E, Kingsley P, Mwamba Miaka E, Palmer J.
Dec-2022
Glob Public Health.
https://pubmed.ncbi.nlm.nih.gov/35748778/

Human African trypanosomiasis (HAT) is considered a highly promising candidate for elimination within the next decade. This paper argues that the experiential knowledge of frontline health workers will be critical to achieve this goal. Interviews are used to explore the ways in which HAT workers understand, maintain, and adjust their skills amidst global and national challenges. We contrast two cases: South Sudan where HAT expertise is scattered and has been repeatedly rebuilt, and the Democratic Republic of Congo (DRC) where specialised mobile detection teams have pro-actively tested people at risk for almost a century. We describe HAT careers where skills are built through participation in HAT technology trials and screening programmes; in the DRC expertise is also supported through formal rotations in screening teams and HAT referral centres for new health workers. As cases fade, de-skilling is a real threat as awareness of populations and authorities diminishes and previously vertical programmes evolve, re-configuring professional development and career paths and associated opportunities for HAT practice. To avoid repeating the mistakes of the 1960s, when elimination also seemed close at hand, we need to recognise that the 'last mile' of elimination hinges on protecting the fragile expertise of frontline health workers.

Leishmaniose

Thymic alterations resulting from experimental visceral leishmaniasis in a Syrian hamster (Mesocricetus auratus).

Março KS, da Silva Borégio J, Jussiani GG, de Souza Ferreira LFE, Flores GVA, Pacheco CMS, Laurenti MD, Machado GF.
03-02-2023
Vet Immunol Immunopathol.
https://pubmed.ncbi.nlm.nih.gov/36758455/

Background: The thymus is a lymphoid organ responsible for the development and maturation of T cells, which are part of the Th1, Th2, Th17, and Treg immune responses triggered by visceral leishmaniasis. The maturation and immunological development of T lymphocytes require a bidirectional interaction between the thymic microenvironment of epithelial cells, dendritic cells, and macrophages and the extracellular matrix with differentiating lymphocytes. **Objectives:** We evaluated the morphological characteristics and tissue distribution of hematopoietic and stromal cells in the thymuses of hamsters experimentally infected with Leishmania infantum, aiming to gain an insight into the pathophysiology of the disease. **Methods:** Fifteen hamsters were subjected to intraperitoneal experimental infection with 10^7L. infantum promastigotes

(MHOM/BR/1972/BH46). The animals were divided into three groups, each comprising five infected hamsters, and were then euthanized 15, 60, and 120 days postinfection. The control groups consisted of three groups of five healthy hamsters euthanized simultaneously with the infected ones. Thymic morphology was evaluated through histopathology and the cell composition through immunohistochemistry. We used antibodies to mark mesenchymal cells (anti-vimentin), epithelial cells (anti-cytokeratin), macrophages (anti-MAC387), B lymphocytes (anti-CD79a), and T lymphocytes (anti-CD3). Immunohistochemistry was also used to mark the parasite in the thymus. Results: Infected and control hamsters showed no difference in thymic morphology and degree of atrophy. After 15 days of infection, CD3 + T lymphocytes in the thymus showed an increase that stabilized over time. At 120 days of infection, we detected a significant decrease in CD79a+ B lymphocytes. The parasite was present in the medullary and corticomedullary regions of 9 out of 15 hamsters. These findings confirm that the presence of a parasite can cause changes in a thymus cell population. However, further studies are needed to evaluate these changes' effects on the immune response of infected animals.

Microbial perils of the tropics: A case of cutaneous leishmaniasis in an immigrant from South America.

Cowan R, Varadarajan S, Wei A, Salim T, DallaPiazza M.
31-12-2022
IDCases.
https://pubmed.ncbi.nlm.nih.gov/36747913/

Identification of potential novel inhibitors against glutamine synthetase enzyme of Leishmania major by using computational tools.

Kashif M, Subbarao N.
06-02-2023
J Biomol Struct Dyn.
https://pubmed.ncbi.nlm.nih.gov/36744549/

Glutamine Synthetase (GS) is functionally important in many pathogens, so its viability as a drug target has been widely investigated. We identified Leishmania major glutamine synthetase (*Lm*-GS) as an appealing target for developing potential leishmaniasis inhibitors. Comparative modeling, virtual screening, MD simulations along with MM-PBSA analyses were performed and two FDA approved compounds namely Chlortalidone (id ZINC00020253) and Ciprofloxacin (id ZINC00020220) were identified as potential inhibitor among the screened library. These compounds may be used as a lead molecule, although additional *in vitro* and *in vivo* testing is required to establish its anti-leishmanial effect. Hence, the goal of this study was to locate and identify certain medications that were previously FDA-approved for definite disorders and that might show anti-leishmanial effect. Due to GS's presence in additional *Leishmania* species, a novel medication docked with *Lm*-GS may have broad anti-leishmania efficacy.Communicated by Ramaswamy H. Sarma.

Low doses of 3-phenyl-lawsone or meglumine antimoniate delivery by tattooing route are successful in reducing parasite load in cutaneous lesions of Leishmania (Viannia) braziliensis-infected hamsters.

Meira RMV, Gomes SLDS, Schaeffer E, Da Silva T, Brito ACS, Siqueira LM, Inácio JD, Almeida-Amaral EE, Da-Cruz AM, Bezerra-Paiva M, Neves RH, Rodrigues LS, Dutra PML, Costa PRR, da Silva AJM, Da-Silva SAG.
19-01-2023
Front Cell Infect Microbiol.
https://pubmed.ncbi.nlm.nih.gov/36743305/

Current therapeutic ways adopted for the treatment of leishmaniasis are toxic and expensive including parasite resistance is a growing problem. Given this scenario, it is urgent to explore treatment alternatives for leishmaniasis. The aim of this study was to evaluate the effect of 3-phenyl-lawsone (3-PL) naphthoquinone on *Leishmania* (*Viannia*) *braziliensis* infection, both *in vitro* and *in vivo*, using two local routes of administration: subcutaneous (higher dose) and tattoo (lower dose). *In vitro* 3-PL showed low toxicity for macrophages (CC_{50} >3200 µM/48h) and activity against intracellular amastigotes (IC_{50} = 193 ± 19 µM/48h) and promastigotes (IC_{50} = 116 ± 26 µM/72h), in which induced increased ROS generation. Additionally, 3-PL up-regulated the production of cytokines such as tumor necrosis factor alpha (TNF-α), monocyte chemotactic protein 1 (MCP-1), interleukin-6 (IL-6) and IL-10 in infected macrophages. However, the anti-amastigote action was independent of nitric oxide production. Treatment of hamsters infected with *L.* (*V.*) *braziliensis* from one week after infection with 3-PL by subcutaneous (25 µg/Kg) or tattooing (2.5 µg/Kg) route, during 3 weeks (3 times/week) or 2 weeks (2 times/week) significantly decreased the parasite load ($p<0.001$) in the lesion. The reduction of parasite load by 3-PL treatment was comparable to reference drug meglumine antimoniate administered by the same routes (subcutaneous 1mg/Kg and tattoo 0.1mg/Kg). In addition, treatment started from five weeks after infection with 3-PL per tattoo also decreased the parasite load. These results show the anti-leishmanial effect of 3-PL against *L.* (*V.*) *braziliensis* and its efficacy by subcutaneous (higher dose) and tattoo (lower dose) routes. In addition, this study shows that drug delivery by tattooing the lesion allows the use of lower doses than the conventional subcutaneous route, which may support the development of a new therapeutic strategy that can be adopted for leishmaniasis.

Inclusion complex of ketoconazole and p-sulfonic acid calix[6]arene improves antileishmanial activity and selectivity against Leishmania amazonensis and Leishmania infantum.

de Queiroz VT, Botelho BO, Guedes NA, Cubides-Román DC, Careta FP, Freitas JCC, Cipriano DF, Costa AV, de Fátima Â, Fernandes SA.
02-02-2023
Int J Pharm.

https://pubmed.ncbi.nlm.nih.gov/36738805/

Imidazolium salts as an alternative for anti-Leishmania drugs: Oxidative and immunomodulatory activities.

Baldissera FG, Fazolo T, da Silva MB, de Santana Filho PC, da Silva VD, Rivillo Perez DM, Klitzke JS, de Oliveira Soares EG, Rodrigues Júnior LC, Peres A, Dallegrave E, Navegantes-Lima KC, Monteiro MC, Schrekker HS, Torres Romão PR.
17-01-2023
Front Immunol.
https://pubmed.ncbi.nlm.nih.gov/36733394/

DNA barcoding of sand flies (Diptera, Psychodidae, Phlebotominae) from the western Brazilian Amazon.

Pinto IS, Rodrigues BL, de Araujo-Pereira T, Shimabukuro PHF, de Pita-Pereira D, Britto C, Brazil RP.
02-02-2023
PLoS One.
https://pubmed.ncbi.nlm.nih.gov/36730314/

The subfamily Phlebotominae comprises important insects for public health. The use of complementary tools such as molecular taxonomy is necessary for interspecific delimitation and/or discovery of cryptic species. Here, we evaluated the DNA barcoding tool to identify different species in the southwestern Brazilian Amazon. For this, we collected sand flies in forest fragments along the highway BR-317, in the municipality of Brasiléia, state of Acre, Brazil. The specimens were DNA-barcoded using a fragment of the cytochrome c oxidase subunit I (COI) gene. The sequences were analyzed to generate K2P pairwise genetic distances and a Neighbour-joining tree. The sand fly barcodes were also clustered into Molecular Operation Taxonomic Units (MOTU) using Automatic Barcode Gap Discovery (ABGD) approach. A total of 59 COI sequences comprising 22 nominal species and ten genera were generated. Of these, 11 species had not been sequenced before, thus being new COI sequences to science. Intraspecific genetic distances ranged between 0 and 4.9%, with Pintomyia serrana presenting the highest values of genetic distance, in addition to having been partitioned into three MOTUs. Regarding the distances to the nearest neighbour, all species present higher values in relation to the maximum intraspecific distance, in addition to forming well supported clusters in the neighbour-joining analysis. The DNA barcoding approach is useful for the molecular identification of sand flies from Brasiléia, state of Acre, and was efficient in detecting cryptic diversity of five species which can be confirmed in future studies using an integrative approach. We also generated new COI barcodes for Trichophoromyia auraensis, Nyssomyia shawi, and Psychodopygus paraensis, which may play a role in the transmission of Leishmania spp. in the Brazilian Amazon.

Light-emitting diodes as visual attractants to phlebotomine sand flies (Diptera: Psychodidae): A mini-review.

da Rocha Silva FB, Machado VE, Pinto MC.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36621755/

Serodiagnosis of leishmaniasis in asymptomatic and symptomatic dogs by use of the recombinant dynamin-1-like protein from Leishmania infantum: A preliminary study.

Siqueira WF, Cardoso MS, Clímaco MC, Silva ALT, Heidt B, Eersels K, van Grinsven B, Bartholomeu DC, Bueno LL, Cleij T, Fujiwara RT.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36610530/

Leishmania donovani induces CD300a expression to dampen effector properties of CD11c$^+$ dendritic and antigen activated CD8$^+$ T cells.

Anand A, Singh R, Saini S, Mahapatra B, Singh A, Singh S, Singh RK.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36610528/

CD8$^+$ T cells are an important regiment of adaptive immunity that play a decisive role in elimination of many species of Leishmania parasite from the host. In visceral leishmaniasis, caused by L. donovani, the loss of CD8$^+$ T cells function has been found associated with augmented pathogenesis. The factors determining CD8$^+$ T cells activation and function against Leishmania antigens are largely unknown. In this study, we investigated the role of an immune inhibitory receptor, CD300a, on the effector properties of dendritic cells and CD8$^+$ T cells. We observed that the Leishmania regulates the effectors function of CD8$^+$ T cells by increasing CD300a expression on CD11c$^+$ dendritic cells. The abrogation of CD300a signaling in parasites infected animals induced CD8$^+$ T cell abilities to produce IFN-γ, TNF-α and also helped them to acquire desired multifunctionality. The CD300a receptor blocking also enhanced the number of CD8$^+$ T cells memory phenotypes at the early days of infection, suggesting its potential beneficial role in vaccine induced immunity. We also observed significantly enhanced levels of pro-inflammatory cytokines in the spleen of CD300a blocked infected animals with concomitant reduced spleen parasite load. Additionally, the abrogation of CD300a signals in the infected animals helped in establishing Th1 type protective humoral immunity with significantly elevated levels of IgG2a antibodies. Since CD8$^+$ T cells are an important determinant of vaccine induced immunity against leishmaniasis, the findings corroborate the potential of CD300a in vaccine induced immunity and thus require further attention.

Cross-sectional spatial and epidemiological analysis of canine visceral leishmaniasis cases in the triple border region, Brazil, Argentina and Paraguay, between 2015 and 2020.

Chiyo L, Dos Santos AG, de Souza AB, Rivas AV, Valle SB, Sevá ADP, Viana KF.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36608750/

Emerging strategies and challenges of molecular therapeutics in antileishmanial drug development.

Gupta D, Singh PK, Yadav PK, Narender T, Patil UK, Jain SK, Chourasia MK.
Feb-2023
Int Immunopharmacol.
https://pubmed.ncbi.nlm.nih.gov/36603357/

Molecular therapy refers to targeted therapies based on molecules which have been intelligently directed towards specific biomolecular structures and include small molecule drugs, monoclonal antibodies, proteins and peptides, DNA or RNA-based strategies, targeted chemotherapy and nanomedicines. Molecular therapy is emerging as the most effective strategy to combat the present challenges of life-threatening visceral leishmaniasis, where the successful human vaccine is currently unavailable. Moreover, current chemotherapy-based strategies are associated with the issues of ineffective targeting, unavoidable toxicities, invasive therapies, prolonged treatment, high treatment costs and the development of drug-resistant strains. Thus, the rational approach to antileishmanial drug development primarily demands critical exploration and exploitation of biochemical differences between host and parasite biology, immunocharacteristics of parasite homing, and host-parasite interactions at the molecular/cellular level. Following this, the novel technology-based designing and development of host and/or parasite-targeted therapeutics having leishmanicidal and immunomodulatory activity is utmost essential to improve treatment efficacy. Thus, the present review is focused on immunological and molecular checkpoint targets in host-pathogen interaction, and molecular therapeutic prospects for Leishmania intervention, and the challenges ahead.

Ecological site distribution of sand fly species of Mokolo, an endemic focus of cutaneous leishmaniasis in northern Cameroon.

Ngouateu Tateng A, Ngouateu OB, Khan Payne V, Maurer M, von Stebut E, Krüger A, Dondji B.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36577476/

Differential expression of Phlebotomus tobbi Adler, Theodor & Lourie, 1930 (Diptera: Psychodidae) genes under different environmental conditions.

Oguz G, Bilgic HA, Karaaslan C, Mergen H, Kasap OE, Alten B.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36577475/

Socioeconomic Status of Guardians as a Risk Factor for Canine Visceral Leishmaniasis: A Cohort Study in an Endemic Area of the Federal District, Brazil.

Marcolino Silva D, Passarella Teixeira AI, Sierra Romero GA.
19-12-2022
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36535251/

Current control measures of canine visceral leishmaniasis (CVL), a chronic and fatal zoonosis with potential transmission to humans, are not efficient enough to reduce its spread. The search for improved control measures should include studies of risk factors for infection and illness. This study aimed to identify the risk factors for CVL in an endemic locality of the Federal District, Brazil, from June 2016 to December 2018. Biologic samples and data on dog characteristics, owner household characteristics, and dog care were collected. A combination of serological and molecular tests was used to identify infected animals. The 248 dogs screened for inclusion were predominantly asymptomatic/oligosymptomatic. The baseline prevalence of infection was 27.5%. One hundred six of 162 susceptible dogs were monitored for an average period of 10.7 months. The estimated CVL incidence was 1.91 cases/100 dog-months. The multivariate analysis using a proportional Cox model included the potential risk factors, with $P \leq 0.25$ in the univariate analyses. Greater purchasing power (hazard ratio [HR], 1.04; 95% CI, 1.01-1.06; P = 0.03) and paved yard (HR, 0.19; 95% CI, 0.13-1.01; P = 0.05) remained in the final model as risk and protection factors, respectively. The use of repellent collars in dogs was associated moderately (P = 0.08) with protection against CVL. Our findings reflect the challenge of identifying strong interventions for reducing CVL incidence. Increased owner wealth had a counterintuitive effect on CVL, making the intervention scenario more complex for a zoonosis traditionally associated with poverty.

Revisiting epidemiology of leishmaniasis in central Asia: lessons learnt.

Yurchenko V, Chistyakov DS, Akhmadishina LV, Lukashev AN, Sádlová J, Strelkova MV.
Feb-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/36453145/

Preparation, optimization, and in vitro-in vivo evaluation of sorafenib-loaded polycaprolactone and cellulose acetate nanofibers for the treatment of cutaneous leishmaniasis.

Alemomen M, Taymouri S, Saberi S, Varshosaz J.
Mar-2023
Drug Deliv Transl Res.
https://pubmed.ncbi.nlm.nih.gov/36223030/

The most common form of leishmaniasis is cutaneous leishmaniasis (CL). The major difficulties in the treatment of leishmaniasis include emergence of resistance, toxicity, long-term treatment, and the high cost of the current drugs. Although the therapeutic effect of sorafenib (SF) has been demonstrated in both in vitro and in vivo models of Leishmania infection, the therapeutic applications are limited due to severe drug-related toxicity; this is, in turn, due to non-specific distribution in the body. Thus, topical delivery has the advantage of the site directed delivery of SF. This research study evaluated SF-loaded hybrid nanofibers (NFs) which were composed of polycaprolactone (PCL) and cellulose acetate (CA) for the CL topical treatment. Accordingly, SF-loaded hybrid NFs were prepared using the electrospinning method. Formulation variables including total polymer concentration, drug/polymer ratio, and CA concentration were optimized using a full factorial design. The prepared SF-loaded NFs were then characterized for morphology, diameter, encapsulation efficiency (EE)%, drug loading (DL) %, and percentage of release efficiency during a 24-h period (RE_{24h}%); the mechanical characteristics were also considered. The physical state of the drug in the optimized NF was evaluated by the X-ray diffraction analysis. Finally, its in vivo efficacy was determined in L. major-infected mice. The optimized formulation had a smooth, cylindrical, non-beaded shape fiber with a diameter of 281.44 nm, EE of 97.96%, DL of 7.48%, RE of 51.05%, ultimate tensile strength of 1.08 MPa, and Young's moduli of 74.96 MPa. The XRD analysis also demonstrated the amorphous state of SF in NF. Further, the in vivo results displayed the higher anti-leishmanial activity of the SF-loaded hybrid NF by efficiently healing lesion and successfully reducing the parasite burden. This, thus, indicated the potential of the clinical capability of the SF-loaded hybrid NF for the effective treatment of CL.

Pre-test probability and likelihood ratios for clinical findings in canine leishmaniasis.

Galán-Relaño Á, Maldonado A, Gómez-Gascón L, Tarradas C, Astorga RJ, Luque I, Huerta B.
Nov-2022
Transbound Emerg Dis.
https://pubmed.ncbi.nlm.nih.gov/36183344/

Leishmaniasis vectors in the environment of treated leishmaniasis cases in Spain.

Díaz-Sáez V, Morillas-Mancilla MJ, Corpas-López V, Rodríguez-Granger J, Sampedro A, Morillas-Márquez F, Martín-Sánchez J.
Nov-2022
Transbound Emerg Dis.
https://pubmed.ncbi.nlm.nih.gov/35943318/

Transmission of leishmaniasis in endemic areas is characterized by microfocality related to the presence of the vector. Most entomological studies in southwestern Europe have focused on sylvatic areas and town outskirts, very few have sampled town or urban centres, and no survey has investigated inside households. The aim of this study was to determine the sand fly species diversity and vector density in the surroundings of human leishmaniasis cases compared with environments in which there was no association. Sand flies were captured in 26 households associated with recently treated leishmaniasis patients, 15 neighbouring houses without associated cases, and in others environments. Overall 7495 sand flies belonging to six species were captured. The highest sand fly density was found in farmhouses where there is a great availability of blood sources and breeding sites. In the environment of human leishmaniasis cases, Sergentomyia minuta was the most prevalent species followed by Phlebotomus perniciosus. Nevertheless, lower Leishmania infantum infection rates and lower intensity of infection were detected in S. minuta sand flies than in P. perniciosus. The density of P. perniciosus in households with recently treated leishmaniasis patients varies between 0 and 108 sand flies per light trap/night, with the maximum values corresponding to farmhouses. This species appears to be adapted to both indoors and outdoors domestic biotopes, including urban households.

Combined immunotherapeutic effect of Leishmania-derived recombinant aldolase and Ambisome against experimental visceral leishmaniasis.

Keerti, Yadav NK, Joshi S, Ratnapriya S, Sahasrabuddhe AA, Dube A.
Feb-2023
J Microbiol Immunol Infect.
https://pubmed.ncbi.nlm.nih.gov/35835687/

Cysticercose

A Rapid Point-of-Care Assay for Cysticercosis Antigen Detection in Urine Samples.

Toribio L, Handali S, Marin Y, Perez E, Castillo Y, Bustos JA, O'Neal SE, Garcia HH; Cysticercosis Working Group in Peru.
06-02-2023
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36746658/

We report a proof-of-concept study using a dipstick assay to detect Taenia solium antigen in urine samples of 30 patients with subarachnoid neurocysticercosis and 10 healthy control subjects. Strips were read in blind by two readers. The assay detected antigen in 29 of 30 cases and was negative in all 10 control samples. Although this study was performed in samples from individuals with subarachnoid neurocysticercosis who likely had high circulating antigen levels, it provides the proof of concept for a functional urine antigen point-of-care assay that detects viable cysts. Such an assay could serve to support a clinical diagnosis of suspect neurocysticercosis or to identify patients at risk of developing severe disease in areas where medical resources are limited, providing evidence to refer these individuals for imaging and specialized care as needed.

Cysticercosis Lesions in Submandibular Region, Masseter and Abdominal Wall in the Same Patient: A Case Report.

Arora R, Sharma A.
Dec-2022
Indian J Otolaryngol Head Neck Surg.
https://pubmed.ncbi.nlm.nih.gov/36742548/

Skeletal Muscle Cysticercosis of the Calf: A Rare Case.

Petkar R, Panchabhai S, Gothwal KV, Mahajan B, Vasava K.
03-01-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/36741636/

An epidemiological survey of porcine cysticercosis in Rungwe District, Tanzania.

Sanga TA, Maganira JD, Kidima WB.
02-02-2023
Prev Vet Med.
https://pubmed.ncbi.nlm.nih.gov/36736267/

Taeniasis/cysticercosis caused by tapeworms belonging to the genus Taenia, poses serious veterinary and public health problems, resulting in economic burden in endemic low-income countries worldwide. However, little epidemiological data exist on infection status among pigs in many areas in Tanzania. We conducted a cross-sectional survey in Rungwe District, Mbeya Region, Tanzania, to define the prevalence and risk factors associated with porcine cysticercosis transmission. One-hundred sixty-nine pigs from 152 households were examined for circulating taeniid antigens by cysticercosis antigen (Ag) enzyme-linked immunosorbent assay (ELISA). Agarose gel electrophoresis was used to differentially diagnose Taenia species-specific cysticerci DNA bands. Structured questionnaires were administered in the surveyed households to collect information on risk factors for porcine cysticercosis transmission. Sera from eleven household pigs tested positive for porcine cysticercosis in the Ag-ELISA with an apparent prevalence of 6.5 % (95 % C.I. 3.8-11.3 %) and estimated true prevalence of 6.1 % (95 % C.I. 3.3-10.9 %). DNA Gel electrophoresis confirmed that 100 % of cysticerci isolated amongst pigs slaughtered in the study area belonged to T. solium. Of the five surveyed wards, positive household pigs were from Bulyaga, Kiwira, and Mpuguso. Lack of knowledge on porcine cysticercosis among household members was found to be significantly associated with positivity of Taenia species antigen in pigs sera (OR = 7.742, p = 0.017). Our results show that porcine cysticercosis is prevalent in Rungwe. There is a definite need to establish control measures against this potential zoonosis to safeguard veterinary and public health in the Rungwe District.

Dracunculose

Duckweeds.

Mateo-Elizalde C, Lynn J, Ernst E, Martienssen R.
06-02-2023
Curr Biol.
https://pubmed.ncbi.nlm.nih.gov/36750028/

Polyploidy impacts population growth and competition with diploids: multigenerational experiments reveal key life history tradeoffs.

Anneberg TJ, O'Neill EM, Ashman TL, Turcotte MM.
05-02-2023
New Phytol.
https://pubmed.ncbi.nlm.nih.gov/36740596/

Ecological theory predicts that early generation polyploids ("neopolyploids") should quickly go extinct owing to the disadvantages of rarity and competition with their diploid progenitors. However, polyploids persist in natural habitats globally. This paradox has been addressed theoretically by recognizing that reproductive assurance of neopolyploids and niche differentiation can promote establishment. Despite this, the direct effects of polyploidy at the population level remain largely untested despite establishment being an intrinsically population-level process. We conducted population-level experiments where life history investment in current and future growth was tracked in four lineage pairs of diploids and synthetic autotetraploids of the aquatic plant Spirodela polyrhiza. Population growth was evaluated with and without competition between diploids and neopolyploids across a range of nutrient treatments. Although neopolyploid populations produce more biomass, they reach lower population sizes, and have reduced carrying capacities when growing alone or in competition across all nutrient treatments. Thus, contrary to individual-level studies, our population-level data suggest that neopolyploids are competitively inferior to diploids. Conversely, neopolyploid populations have greater investment in dormant propagule production than diploids. Our results show that neopolyploid populations should not persist based on current growth dynamics, but high potential future growth may allow polyploids to establish in subsequent seasons.

Cupric ions inducing dynamic hormesis in duckweed systems for swine wastewater treatment: Quantification, modelling and mechanisms.

Li C, Lin Y, Li X, Cheng JJ, Yang C.
25-03-2023
Sci Total Environ.
https://pubmed.ncbi.nlm.nih.gov/36623645/

Hormesis has attracted close attention of environmental and toxicological communities over the past decades. Most studies focused on the hormesis induced by stressors in the aspect of their biotoxicity to organisms, while little research was conducted on hormesis in the

aspect of biological wastewater treatment process. In this study, removal of NH_4^+-N and Cu^{2+} by S. polyrrhiza under long-term Cu^{2+} exposure at environmentally relevant concentrations in swine wastewater was investigated. Removal efficiencies of NH_4^+-N by duckweeds at 0.0, 0.1, 0.5, 1.0, 2.0 and 4.0 mg/L Cu^{2+} were 81.6 %, 83.7 %, 89.4 %, 74.9 %, 61.8 % and 45.1 % on day 28, however, during the initial period of cultivation (0-4 days), such hormetic effect was not observed, indicating time-dependent feature of hormesis in NH_4^+-N removal. The modified logistic growth model was applied to describe long-term hormesis induced by Cu^{2+} on NH_4^+-N removal and it suggested that the optimal copper exposure for ammonium removal was 0.48 mg/L. More importantly, it was found that previous exposure to low doses of Cu^{2+} (0-1 mg/L) could enhance NH_4^+-N removal performance under the second exposure. Cu^{2+} above 1 mg/L could switch copper bioaccumulation pattern from the Langmiur-irreversible type to reversible one, indicating risk of secondary pollution. Six components including freshly-produced humic-like substances, lignin, fulvic acid-protein complex, free amino acid-like substances, tyrosine-like substance and soluble amino acid-like substances in duckweeds were detected by parallel factor (PARAFAC) model detected. Principle component analysis (PCA) conducted on PARAFAC components suggested that enhanced synthesis of protein and growth factors intracellularly at low dose stimulation improved ammonia uptake from the environment. This study provided a novel strategy to improve treatment performance of duckweeds for copper contaminated wastewater and helped understand biochemical responses and their roles in evolutionary adaptive strategies to stresses.

Phylotranscriptomic analyses reveal multiple whole-genome duplication events, the history of diversification and adaptations in the Araceae.

Zhao L, Yang YY, Qu XJ, Ma H, Hu Y, Li HT, Yi TS, Li DZ.
07-02-2023
Ann Bot.
https://pubmed.ncbi.nlm.nih.gov/35671385/

Echinococcose

Analysis of sheep peripheral blood mononuclear cells in response to Echinococcus granulosus microRNA-71 overexpression.

Li Y, Yan L, Ci D, Li R, Li W, Xia T, Shi H, Ayaz M, Zheng Y, Wang P.
02-02-2023
Mol Biochem Parasitol.
https://pubmed.ncbi.nlm.nih.gov/36739092/

Cyst echinococcosis, caused by Echinococcus granulosus, remains a zoonotic disease posing a great threat to public health and meat production industry. Sheep infected with E. granulosus show relatively high abundance of egr-miR-71 in the sera, but its role is unknown. Using bioinformatics and cell migration and Transwell assays, we comparatively analyzed the proteomes and cell invasion of sheep PBMCs in response to egr-miR-71 overexpression. The results showed that the egr-miR-71 induced a total of 157 proteins being differentially expressed and mainly involved in immune responses. In sheep PBMCs, egr-miRNA-71 overexpression induced significant downregulation of macrophage migration inhibitory factor (MIF) and accordingly promoted cell migration and invasion compared with the control. The results will provide a clue for further investigation of a role of circulating egr-miR-71 in immune responses during E. granulosus infection.

A multi-epitope vaccine GILE against Echinococcus Multilocularis infection in mice.

Zhou P, Zhou Z, Huayu M, Wang L, Feng L, Xiao Y, Dai Y, Xin M, Tang F, Li R.
17-01-2023
Front Immunol.
https://pubmed.ncbi.nlm.nih.gov/36733393/

Introduction: The objective of this study is to construct a multi-epitope vaccine GILE containing B-cell and T-cell epitopes against *Echinococcus Multilocularis* (*E. multilocularis*) infection based on the dominant epitopes of *E. multilocularis* EMY162, LAP, and GLUT1. Methods: The structure and hydrophobicity of GILE were predicted by SWISSMODEL, pyMOL, SOPMA and VMD, and its sequence was optimized by Optimum™ Codon. The GILE gene was inserted into pCzn1 and transformed into *Escherichia coli* Arctic express competent cells. IPTG was added to induce the expression of recombinant proteins. High-purity GILE recombinant protein was obtained by Ni-NTA Resin. BALB/c mice were immunized with GILE mixed with Freund's adjuvant, and the antibody levels and dynamic changes in the serum were detected by ELISA. Lymphocyte proliferation was detected by MTS. The levels of IFN-g and IL-4 were detected by ELISpot and flow cytometry (FCM). T cells were detected by FCM. The growth of hepatic cysts was evaluated by Ultrasound and their weights were measured to evaluate the immune protective effect of GILE. Results: The SWISS-MODEL analysis showed that the optimal model was EMY162 $_{95\text{-}104}$-LAP$_{464\text{-}479}$-LAP$_{495\text{-}510}$-LAP$_{396\text{-}410}$-LAP$_{504\text{-}518}$-EMY162$_{112\text{-}126}$. The SOPMA results showed that there were Alpha helix (14.88%), Extended strand (26.25%), Beta turn (3.73%) and Random coil (45.82%) in the secondary structure of GILE. The restriction enzyme digestion and sequencing results suggested that the plasmid pCzn1-GILE was successfully constructed. The SDSPAGE results indicated that the recombinant protein was 44.68 KD. The ELISA results indicated that mice immunized with GILE showed higher levels of serum antibodies compared to the PBS group. The FCM and ELISpot results indicated that mice immunized with GILE secreted more IFN-g and IL-4. Immunization with GILE also led to a significant decrease in the maximum diameter and weight of cysts and stimulated the production of $CD4^+$ and $CD8^+$ T Cell. Discussion: A multi-epitope vaccine GILE with good immunogenicity and antigenicity has been successfully constructed in this study, which may provide important theoretical and experimental bases for the prevention and treatment of *E. multilocularis* infection.

Body Imaging of Bacterial and Parasitic Zoonoses: Keys to Diagnosis.

Kraft DC, Naeem M, Mansour J, Beal MA, Bailey TC, Bhalla S.
Mar-2023
Radiographics.
https://pubmed.ncbi.nlm.nih.gov/36729948/

The potential role of roaming dogs in establishing a geographically novel life cycle of taeniids (Echinococcus spp. and Taenia spp.) in a non-endemic area.

Mutwiri T, Muigai AWT, Magambo J, Mulinge E, Gitau L, Muinde P, Bettridge JM, Rogan M, Fèvre EM, Falzon LC.
Feb-2023
Vet Parasitol Reg Stud Reports.
https://pubmed.ncbi.nlm.nih.gov/36725161/

Introduction: Cystic Echinococcosis (CE) is endemic in humans and livestock in many pastoral communities in Kenya. The distribution of the disease is enhanced by several factors, including livestock trade, which has allowed for the spread of CE to non-endemic areas such as western Kenya. Dogs' roaming behaviour, with consequent contamination of the environment with intestinal parasites, could then lead to parasite establishment. This study examined dogs' infection levels with taeniid eggs and their potential role in contaminating the environment with intestinal parasites. Methodology: We selected sixteen ruminant slaughterhouses in Busia and Bungoma Counties, and around each slaughterhouse we identified ten homesteads owning free-roaming dogs. We administered a questionnaire on dog management practices to the homestead owner and collected a faecal sample from the dog's rectum. In homesteads around 8 of the 16 slaughterhouses, we collared dogs with a GPS tracker to assess their movement patterns. The faecal samples were examined microscopically following zinc-chloride sieving-floatation technique for the presence of taeniid eggs and other canine intestinal parasites. Polymerase Chain Reaction - Restriction Fragment Length Polymorphism of NADH dehydrogenase subunit 1 gene and sequencing were used to confirm taeniid eggs identified during microscopy. Additionally, the Coproantigen-ELISA was used to detect the presence of taeniid antigen in a sub-set of the faecal samples. Results: Helminths detected in the 155 dogs sampled included hookworms (n = 92; 59.4%), ascarids (n = 15; 9.7%), and taeniids (n = 1; 0.6%). Through Copro-PCR, 13 eggs extracted from the sample of the only taeniid infected dog were sequenced and identified as E. canadensis (G6/7) [n = 1], Taenia multiceps [n = 1], and Taenia serialis [n = 6]; the remaining were indeterminate. Of the 77 faecal samples tested for E. granulosus sensu lato (s. l.) with the Copro-ELISA, 64 (83.1%) were negative, 12 (15.6%) were positive, while 1 (1.3%) was suspicious. The dogs travelled a median of 13.5 km daily, and 28 dogs visited the slaughterhouses during the 5-day recording period. Conclusion: The results indicate a relatively high carriage of zoonotic parasites by free-roaming domestic dogs in western Kenya, which poses a risk to human and livestock populations. We report for the first time a domestic lifecycle of Echinococcus canadensis and Taenia multiceps in western Kenya, as well as a presumptive sylvatic cycle of coenurosis by T. serialis. We recommend an extensive and ongoing Copro-antigen survey of dog faeces, broader assessment of dog parasites with zoonotic potential, adherence to slaughterhouse management practices, and dog-ownership programmes to highlight the importance of deworming and restricted dog movements.

Cerebral Alveolar Echinococcosis.

Ju H, Liu C.
02-02-2023
N Engl J Med.
https://pubmed.ncbi.nlm.nih.gov/36724380/

A Muskrat (Ondatra zibethicus) with alveolar echinococcosis bitten to death by a dog - a challenge for the forensic pathologist as an expert witness.

Thiele T, Morf N, Grimm F, Kipar A, Hetzel U.
Jan-2023
J Comp Pathol.
https://pubmed.ncbi.nlm.nih.gov/36610082/

We present a case that illustrates the complex contexts in which forensic veterinary pathology examinations may be carried out. A wild muskrat (Ondatra zibethicus) had died after a putative bite attack from a domestic dog. Bite attacks by privately owned dogs on wild animals in Switzerland violate the Swiss civil (and/or hunting) laws, and dog owners are generally punished with a monetary fine; hence, this case appeared to be straightforward. However, the results of the subsequent post-mortem examination of the muskrat not only confirmed the presence of injuries related to the bite attack, but also detected alveolar echinococcosis (ie, infestation with Echinococcus multilocularis). Therefore, as an intermediate host of the parasite, the muskrat could have contributed to further spread of a severe helminthic zoonosis had it not been killed by the dog. It was probably an easy prey for the dog as it probably had been weakened by the disease. Furthermore, muskrats are considered as pests and invasive species, and are non-indigenous huntable game in Switzerland and other European countries in which programmes for the prevention of their further spread and endangerment of native wildlife are established. The role of the forensic veterinary pathologist in such a complex scenario is to adopt an unbiased approach and establish the facts, which in this case was to determine the cause of death and suspected perpetrator, identify any concomitant and/or underlying diseases and consider potential animal welfare issues.

Phylogeny and population structure of Echinococcus granulosus (sensu stricto) based on full-length cytb-nad2-atp6 mitochondrial genes - First report from Sialkot District of Pakistan.

Alvi MA, Ali RMA, Li L, Saqib M, Qamar W, Hassan A, Ghafoor M, Rahman SU, Khan MUZ, Fu BQ, Liu Y, Yin H, Yan HB, Jia WZ.
Feb-2023

Mol Biochem Parasitol.
https://pubmed.ncbi.nlm.nih.gov/36584819/

The polymorphic analysis of cox1 and cob genes of Echinococcus granulosus in the Ngari region of Tibet in China.

Wei Y, Li W, Shao C, Zhao H, Hu Y, Liu H, Cao J.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36566892/

Cystic echinococcosis (CE) is an important zoonotic parasitic disease caused by Echinococcus granulosus (E. granulosus). CE seriously threatens human health and the development of animal husbandry. The Ngari region is one of the world's highest endemic regions for CE, while genetic polymorphisms of E. granulosus were unclear. Paraffin slices of liver Cyst were collected from seventy-nine surgical patients with echinococcosis in the Ngari region. DNA was extracted from samples. The cox1 and cob genes of mitochondrial DNA of E. granulosus were simultaneously amplified and sequenced. The sequencing results were compared with the standard sequence (KU925397.1and HF947574.1). Phylogenetic trees and the haplotype network of cob and cox1 genes were constructed and analyzed genotypes of E. granulosus isolated from humans in the Ngari Region of Tibet. Out of 79 hydatid cyst samples collected from surgery patients, 60 isolates were identified as G1/ G3, and two isolates were identified as G6/ G7. Analysis of the cob/ cox1 genes revealed 9/7 mutations resulting in 8/6 haplotypes, respectively. The cob and cox1 neutrality indices computed by Tajima's D and Fu's Fs tests showed high negative values in Echinococcus granulosus sensu stricto (E. granulosus s. s.). The result suggested that E. granulosus in the Ngari region experienced population expansion or a negative selection. We found that G1/ G3 was still the main genotype, and G6/ G7 was found occasionally in humans of the Ngari region. Therefore, we recommend future surveys and control efforts to investigate G1/ G3 and G6/ G7 transmission in the Ngari region.

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

Practical guide to the diagnostics of ruminant gastrointestinal nematodes, liver fluke and lungworm infection: interpretation and usability of results.

Sabatini GA, de Almeida Borges F, Claerebout E, Gianechini LS, Höglund J, Kaplan RM, Lopes WDZ, Mitchell S, Rinaldi L, von Samson-Himmelstjerna G, Steffan P, Woodgate R.
08-02-2023
Parasit Vectors.
https://pubmed.ncbi.nlm.nih.gov/36755300/

The diagnostics of ruminant parasites remains one of the cornerstones for parasite control best practices. Field veterinarians have several techniques at their disposal (fecal egg count, coproculture, FAMACHA®, plasma pepsinogen, ELISA-Ostertagia, ELISA-Fasciola, Baermann and ELISA-Lungworm) for the identification and/or quantification of gastrointestinal nematodes, lungworms and liver fluke infecting small ruminants and cattle. Each of these diagnostic tools has its own strengths and weaknesses and is more appropriate for a specific production operation and/or age of the animal (young and adults). This review focuses on the usability and interpretation of the results of these diagnostic tools. The most advanced technical information on sampling, storage, advantages and limitations of each tool for different types of production operations and animal categories is provided.

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.
06-02-2023
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.

"Open a can of worms": eosinophilic liver infiltration due to Clonorchis sinensis infection.

Lan T, Tai Y, Tang C.
03-02-2023
Am J Gastroenterol.
https://pubmed.ncbi.nlm.nih.gov/36746416/

An evolutionary molecular adaptation of an unusual stefin from the liver fluke Fasciola hepatica redefines the cystatin superfamily.

Buša M, Matoušková Z, Bartošová-Sojková P, Pachl P, Řezáčová P, Eichenberger RM, Deplazes P, Horn M, Štefanić S, Mareš M.
31-01-2023
J Biol Chem.
https://pubmed.ncbi.nlm.nih.gov/36736427/

Body Imaging of Bacterial and Parasitic Zoonoses: Keys to Diagnosis.

Kraft DC, Naeem M, Mansour J, Beal MA, Bailey TC, Bhalla S.
Mar-2023
Radiographics.
https://pubmed.ncbi.nlm.nih.gov/36729948/

Zoonotic infections, which are transmitted from animals to humans, have been a substantial source of human disease since antiquity. As the human population continues to grow and human influence on the planet expands, humans frequently encounter both domestic and wild animals. This has only increased as deforestation, urbanization, agriculture, habitat fragmentation, outdoor recreation, and international travel evolve in modern society, all of which have resulted in the emergence and reemergence of zoonotic infections. Zoonotic infections pose a diagnostic challenge because of their nonspecific clinical manifestations and the need for specialized testing procedures to confirm these diagnoses. Affected patients often undergo imaging during their evaluation, and a radiologist familiar with the specific and often subtle imaging patterns of these infections can add important clinical value. The authors review the multimodality thoracic, abdominal, and musculoskeletal imaging findings of zoonotic bacterial (eg, *Bartonella henselae, Pasteurella multocida, Francisella tularensis, Coxiella burnetii*, and *Brucella* species), spirochetal (eg, *Leptospira* species), and parasitic (eg, *Echinococcus, Paragonimus, Toxocara*, and *Dirofilaria* species) infections that are among the more commonly encountered zoonoses in the United States. Relevant clinical, epidemiologic, and pathophysiologic clues such as exposure history, occupational risk factors, and organism life cycles are also reviewed. Although many of the imaging findings of zoonotic infections overlap with those of nonzoonotic infections, granulomatous diseases, and malignancies, radiologists' familiarity with the imaging patterns can aid in the differential diagnosis in a patient with a suspected or unsuspected zoonotic infection. © RSNA, 2023 Quiz questions for this article are available through the Online Learning Center.

Prevalence of intestinal parasites in animal hosts and potential implications to animal and human health in Edo, Nigeria.

Inegbenosun CU, Isaac C, Anika FU, Aihebholoria OP.
Jan-2023
J Vet Sci.
https://pubmed.ncbi.nlm.nih.gov/36726275/

Comparison of the therapeutic efficacy of five anthelmintics against natural Fasciola hepatica infections in dairy cattle from the Mantaro Valley, Peru.

Zárate-Rendón DA, Briones-Montero A, Huaraca-Oré NA, Veirano GS, Levecke B, Geldhof P.
Feb-2023
Vet Parasitol Reg Stud Reports.
https://pubmed.ncbi.nlm.nih.gov/36725157/

The intensive use of anthelmintic drugs to control Fasciola hepatica infections in dairy cattle has resulted in the emergence of anthelmintic resistance. Cases of resistance to triclabendazole (TCBZ) have been reported worldwide. The main goal of this research was to evaluate the main five fasciolicides to control fasciolosis in dairy cattle in the Mantaro Valley, Peru. Two fecal egg count reduction tests were performed. In a first study, 24 naturally F. hepatica infected cattle were randomly grouped into three experimental groups (n = 8). Groups were treated with either TCBZ, nitroxynil (NTX) or closantel (CLOS). In a second experiment, 55 naturally infected cows were grouped into three experimental groups and treated with either TCBZ (n = 18), rafoxanide (RFX) + albendazole (ABZ) (n = 19) or clorsulon (CLN) + ivermectin (IVM) (n = 18). Therapeutic efficacy was determined following the WAAVP guidelines by measuring reduction in fluke egg output at days 15 and 30 post-treatment. Bootstrapping method was used to obtain the 95% confidence intervals. The efficacy of TCBZ was inadequate in both studies (≤80.8%). Closantel showed high efficacy (≥ 90%) at both days, while NTX showed 92.9% (83-100) and 82.1% (53.6-100), efficacy, at days 15 and 30, respectively. Efficacy for RFX were 92.1% (79.6-98.9) and 97.4% (94.1-99.4); and for CLN, 98.8% (97.6-100) and 80.1% (44.7-99.4), at days 15 and 30, respectively. The outcome of this study indicates reduced therapeutic efficacy of TCBZ against F. hepatica in an important dairy area of the Peruvian central highlands but also demonstrates the validity of four alternatives.

A major locus confers triclabendazole resistance in Fasciola hepatica and shows dominant inheritance.

Beesley NJ, Cwiklinski K, Allen K, Hoyle RC, Spithill TW, La Course EJ, Williams DJL, Paterson S, Hodgkinson JE.
26-01-2023
PLoS Pathog.
https://pubmed.ncbi.nlm.nih.gov/36701396/

Fasciola hepatica infection is responsible for substantial economic losses in livestock worldwide and poses a threat to human health in endemic areas. The mainstay of control in livestock and the only drug licenced for use in humans is triclabendazole (TCBZ). TCBZ resistance has been reported on every continent and threatens effective control of fasciolosis in many parts of the world. To date, understanding the genetic mechanisms underlying TCBZ resistance has been limited to studies of candidate genes, based on assumptions of their role in drug action. Taking an alternative approach, we combined a genetic cross with whole-genome sequencing to localise a ~3.2Mbp locus within the 1.2Gbp F. hepatica genome that confers TCBZ resistance. We validated this locus independently using bulk segregant analysis of F. hepatica populations and showed that it is the target of drug selection in the field. We genotyped individual parasites and tracked segregation and reassortment of SNPs to show that TCBZ resistance exhibits Mendelian inheritance and is conferred by a dominant allele. We defined gene content within this locus to pinpoint genes involved in membrane transport, (e.g. ATP-binding cassette family B, ABCB1), transmembrane signalling and signal transduction (e.g. GTP-Ras-adenylyl cyclase and EGF-like protein), DNA/RNA binding and transcriptional regulation (e.g. SANT/Myb-like DNA-binding domain protein) and drug storage and sequestration (e.g. fatty acid binding protein, FABP) as prime candidates for conferring TCBZ resistance. This study constitutes the first experimental cross and genome-wide approach for any heritable trait in F. hepatica and is key to understanding the evolution of drug resistance in Fasciola spp. to inform deployment of efficacious anthelmintic treatments in the field.

Long-term Persistence of Opisthorchis viverrini Antigen in Urine: A Prospective Study in Northeast Thailand.

Worasith C, Wongphutorn P, Kopolrat KY, Homwong C, Techasen A, Thanan R, Wangboon C, Eamudomkarn C, Sithithaworn J, Crellen T, Sithithaworn P.
26-12-2022
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36572008/

Filariose lymphatique

Larvicidal activity of hexane extract, fatty acids, and methyl esters from Tecoma stans pericarps against Culex quinquefasciatus.

Silva ALD, Azevedo LS, Gonçalves TPR, Coimbra MC, Siqueira EP, Alves SN, Lima LARDS.
03-02-2023
Nat Prod Res.
https://pubmed.ncbi.nlm.nih.gov/36735355/

Culex quinquefasciatus (Diptera: Culicidae) is responsible for the transmission of lymphatic filariasis. The search for natural sources of new insecticides to control mosquitoes has intensified in recent years. *Tecoma stans* is an exotic species in Brazil, known as 'ipê de jardim'. *T. stans* pericarps were extracted with hexane in Soxhlet apparatus, and fatty acids (FA) and methyl esters (FAME) were obtained by transesterification reaction of hexane extract (HE). HE, FA, and FAME were evaluated against 3$^{rd.}$ and 4$^{th.}$ instar larvae of *Culex quinquefasciatus*. Analysis by gas chromatography-mass spectrometry (GC/MS) identified the hydrocarbon nonacosane (81.69%) as the major compound in HE, and linolenic (16.89%), linoleic (16.83%), and palmitic acids (21.00%) were predominant in FA. FA and HE, at a concentration of 250 µg/mL, promoted mortality of 81.67% and 68.66% of larvae, respectively. HE and FA obtained from *T. stans* pericarps have larvicidal potential for the control of *C. quinquefasciatus*.

Reverse vaccinology assisted design of a novel multi-epitope vaccine to target Wuchereria bancrofti cystatin: An immunoinformatics approach.

Das NC, Gupta PSS, Panda SK, Rana MK, Mukherjee S.
Feb-2023
Int Immunopharmacol.
https://pubmed.ncbi.nlm.nih.gov/36586276/

Proteases are the critical mediators of immunomodulation exerted by the filarial parasites to bypass and divert host immunity. Cystatin is a small (~15 kDa) immunomodulatory filarial protein and known to contribute in the immunomodulation strategy by inducing anti-inflammatory response through alternative activation of macrophages. Recently, Wuchereria bancrofti cystatin has been discovered as a ligand of human toll-like receptor 4 which is key behind the cystatin-induced anti-inflammatory response in major human antigen-presenting cells. Considering the pivotal role of cystatin in the immunobiology of filariasis, cystatin could be an efficacious target for developing vaccine. Herein, we present the design and in-silico analyses of a multi-epitope-based peptide vaccine to target W. bancrofti cystatin through immune-informatics approaches. The 262 amino acid long antigen construct comprises 9 MHC-I epitopes and MHC-II epitopes linked together by GPGPG peptide alongside an adjuvant (50S ribosomal protein L7/L12) at N terminus and 6 His tags at C terminus. Molecular docking study reveals that the peptide could trigger TLR4-MD2 to induce protective innate immune responses while the induced adaptive responses were found to be mediated by IgG, IgM and Th1 mediated responses. Notably, the designed vaccine exhibits high stability and no allergenicity in-silico. Furthermore, the muti epitope-vaccine was also predicted for its RNA structure and cloned in pET30ax for further experimental validation. Taken together, this study presents a novel multi-epitope peptide vaccine for triggering efficient innate and adaptive immune responses against W. bancrofti to intervene LF through immunotherapy.

Mycetome

Using a Madurella mycetomatis specific PCR on grains obtained via non-invasive Fine Needle Aspirated material is more accurate than cytology.

Siddig EE, Ahmed A, Hassan OB, Bakhiet SM, Verbon A, Fahal AH, van de Sande WWJ.
05-01-2023
Mycoses.
https://pubmed.ncbi.nlm.nih.gov/36740735/

Background: Eumycetoma is a chronic subcutaneous inflammatory fungal infection most often caused by the fungus Madurella mycetomatis. Using a species-specific PCR on DNA directly isolated from grains is currently the most reliable method for species identification. However, so far, PCR has been performed on grains obtained through deep-seated surgical biopsies, which are invasive procedures. Grains can also be obtained via ultrasound-guided fine-needle aspiration (US-FNA). Here we determined the diagnostic performance of species-specific PCRs performed on samples obtained through US-FNA. Methods: From 63 patients, US-FNA was performed to obtain eumycetoma grains; 34 patients also underwent a deep-seated biopsy. From the grains, DNA was isolated, and one pan-fungal and two M. mycetomatis-specific PCRs were performed. The sensitivity and specificity were determined. Results: Of the 63 patients who underwent US-FNA, 78% (49/63) had evidence of eumycetoma based on cytology and 93.7% (59/63) based on species-specific PCRs. In the 34 patients for whom surgical biopsies were performed as well, 31 patients had a positive PCR for M. mycetomatis when DNA was isolated from the deep-seated biopsy, and 30 had a positive PCR when DNA was obtained from the US-FNA material. This resulted in a 96.8% sensitivity, and 100% specificity with 97.1% diagnostic accuracy for PCR performed on US-FNA. Conclusion: PCR performed on the US-FNA material has a similar sensitivity and specificity as PCR performed on deep-seated biopsies. Therefore, when using PCR, a deep-seated biopsy may not be necessary to obtain grains.

Onchocercose

Autochthonous Onchocerca lupi infection of a domestic dog in Austria.

Unterköfler MS, Huck A, Silbermayr K, Fuehrer HP.
01-02-2023
Parasit Vectors.
https://pubmed.ncbi.nlm.nih.gov/36726184/

Onchocerca lupi is an emerging canine ocular pathogen with zoonotic potential. In Europe, known endemic areas are the Iberian Peninsula and Greece, but the parasite has also been found in Romania, Hungary, and Germany. A 5-year-old Irish Wolfhound was presented in August 2021 with ocular discharge. A subconjunctival granulomatous nodule containing several nematode fragments was removed. Molecular analysis of the mitochondrial cytochrome c oxidase subunit I gene confirmed the presence of O. lupi genotype 1. This is the first report of autochthonous O. lupi infection in a dog from Austria.

Schistosomiase

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.
06-02-2023
Int J Parasitol.
https://pubmed.ncbi.nlm.nih.gov/36754342/

Mycoplasma pneumoniae and Schistosoma mansoni co-infection in a young patient with extensive longitudinal acute transverse myelitis.

Alayafi HA, Alruwaili M, Aljumah TK, Alshehri A, Alrasheed D, Alanazi MF, AlRuwaili R, Ali NH, Albarrak AM, AlRashdi BM, Taha AE.
31-12-2022
J Infect Dev Ctries.
https://pubmed.ncbi.nlm.nih.gov/36753653/

Introduction: Acute transverse myelitis is an uncommon inflammatory, intramedullary, disorder of the spinal cord. Spastic paraplegia, impaired sphincter functions, and sensory loss, with sensory level, are the clinical manifestations of this devastating disorder. The utilization of magnetic resonant imaging (MRI) contributes to the surge in the diagnosis of more ATM cases. Although the causes of ATM are numerous, both Mycoplasma pneumoniae and Schistosoma mansoni are uncommon causes and their co-existence in the same patient has not been reported before in Saudi Arabia. Case: We report a 25-year-old ATM male patient presented with a history of sudden onset severe low back pain. Within four hours from the onset of the back pain, he became completely paraplegic with impaired functions of the bowel and urinary bladder sphincter. Furthermore, he lost all modalities of sensory functions in the lower limbs. His examination revealed spastic complete paraplegia with sensory level at T6. Clinical neurological examination revealed normal upper limbs and brain functions. The MRI of the cervico-dorsal spine showed extensive longitudinal hyperintense lesion extending from the upper cervical segments to the lower dorsal segments (extensive longitudinal transverse myelitis). A post-infectious immune-mediated predisposition was highly suspected due to the very high titers of anti-Mycoplasma pneumoniae IgM and IgG that were detected. The immunosuppressant therapy did not improve his paraplegia. A spinal cord biopsy revealed the presence of several Schistosoma mansoni ova surrounded by chronic inflammatory reactions and reactive gliosis. Conclusions: Both Mycoplasma pneumoniae and Schistosoma mansoni should be investigated in cases with extensive longitudinal ATM.

IL-4 and helminth infection downregulate MINCLE-dependent

macrophage response to mycobacteria and Th17 adjuvanticity.

Schick J, Altunay M, Lacorcia M, Marschner N, Westermann S, Schluckebier J, Schubart C, Bodendorfer B, Christensen D, Alexander C, Wirtz S, Voehringer D, da Costa CP, Lang R.
08-02-2023
Elife
https://pubmed.ncbi.nlm.nih.gov/36753434/

The myeloid C-type lectin receptor (CLR) MINCLE senses the mycobacterial cell wall component trehalose-6,6'-dimycolate (TDM). Recently, we found that IL-4 downregulates MINCLE expression in macrophages. IL-4 is a hallmark cytokine in helminth infections, which appear to increase the risk for mycobacterial infection and active tuberculosis. Here, we investigated functional consequences of IL-4 and helminth infection on MINCLE-driven macrophage activation and Th1/Th17 adjuvanticity. IL-4 inhibited MINCLE and cytokine induction after macrophage infection with *Mycobacterium bovis* bacille Calmette-Guerin (BCG). Infection of mice with BCG upregulated MINCLE on myeloid cells, which was inhibited by IL-4 plasmid injection and by infection with the nematode *Nippostrongylus brasiliensis* in monocytes. To determine the impact of helminth infection on MINCLE-dependent immune responses, we vaccinated mice with a recombinant protein together with the MINCLE ligand trehalose-6,6-dibehenate (TDB) as adjuvant. Concurrent infection with *N. brasiliensis* or with *Schistosoma mansoni* promoted T cell-derived IL-4 production and suppressed Th1/Th17 differentiation in the spleen. In contrast, helminth infection did not reduce Th1/Th17 induction by TDB in draining peripheral lymph nodes, where IL-4 levels were unaltered. Upon use of the TLR4-dependent adjuvant G3D6A, *N. brasiliensis* infection impaired selectively the induction of splenic antigen-specific Th1 but not of Th17 cells. Inhibition of MINCLE-dependent Th1/Th17 responses in mice infected with *N. brasiliensis* was dependent on IL-4/IL-13. Thus, helminth infection attenuated the Th17 response to MINCLE-dependent immunization in an organ- and adjuvant-specific manner via the Th2 cytokines IL-4/IL-13. Taken together, our results demonstrate downregulation of MINCLE expression on monocytes and macrophages by IL-4 as a possible mechanism of thwarted Th17 vaccination responses by underlying helminth infection.

Placental Parasitic Infections and Pregnancy Outcomes Among Women Delivering at a Tertiary Hospital in Northern Tanzania.

Felician EK, Ngoda OA, Jahanpour OF, Kahima J, Msuya SE, Lukambagire AH.
2022
East Afr Health Res J.
https://pubmed.ncbi.nlm.nih.gov/36751683/

Open-source environmental data as an alternative to snail surveys to assess schistosomiasis risk in areas approaching elimination.

Grover E, Allshouse W, Lund A, Liu Y, Paull S, James K, Crooks J, Carlton E.
27-01-2023
Res Sq.
https://pubmed.ncbi.nlm.nih.gov/36747768/

Background: Although the presence of intermediate snails is a necessary condition for local schistosomiasis transmission to occur, using them as surveillance targets in areas approaching elimination is challenging because the patchy and dynamic quality of snail host habitats makes collecting and testing snails labor-intensive. Meanwhile, geospatial analyses that rely on remotely sensed data are becoming popular tools for identifying environmental conditions that contribute to pathogen emergence and persistence. Methods: In this study, we assessed whether open-source environmental data can be used to predict the presence of human *Schistosoma japonicum* infections among households with a similar or improved degree of accuracy compared to prediction models developed using data from comprehensive snail surveys. To do this, we used infection data collected from rural communities in Southwestern China in 2016 to develop and compare the predictive performance of two Random Forest machine learning models: one built using snail survey data, and one using open-source environmental data. Results: The environmental data models outperformed the snail data models in predicting household *S. japonicum* infection with an estimated accuracy and Cohenâ€™s kappa value of 0.89 and 0.49, respectively, in the environmental model, compared to an accuracy and kappa of 0.86 and 0.37 for the snail model. The Normalized Difference in Water Index (NDWI) within half to one kilometer of the home and the distance from the home to the nearest road were among the top performing predictors in our final model. Homes were more likely to have infected residents if they were further from roads, or nearer to waterways. Conclusion: Our results suggest that in low-transmission environments, investing in training geographic information systems professionals to leverage open-source environmental data could yield more accurate identification of pockets of human infection than using snail surveys. Furthermore, the variable importance measures from our models point to aspects of the local environment that may indicate increased risk of schistosomiasis. For example, households were more likely to have infected residents if they were further from roads or were surrounded by more surface water, highlighting areas to target in future surveillance and control efforts.

Recognizing and monitoring infectious sources of schistosomiasis by developing deep learning models with high-resolution remote sensing images.

Xue JB, Xia S, Wang XY, Huang LL, Huang LY, Hao YW, Zhang LJ, Li SZ.
07-02-2023
Infect Dis Poverty.
https://pubmed.ncbi.nlm.nih.gov/36747280/

Biochanin A in murine Schistosoma mansoni infection: effects on inflammation, oxidative stress and fibrosis.

Elhenawy AA, Elmehankar MS, Nabih N, Elzoheiry MA, Hany H, El-Gamal R, Aboukamar WA.
06-02-2023
J Helminthol.
https://pubmed.ncbi.nlm.nih.gov/36740983/

Biochanin A (BCA) is a multifunctional natural compound that possesses anti-infective, anti-inflammatory, anti-oxidative and hepatoprotective effects. The aim of the study was to assess the therapeutic efficacy of BCA on *Schistosoma mansoni*-infected mice. Fifty mice were divided into six different groups as non-infected, non-infected BCA-treated, infected untreated, early infected BCA-treated (seven days post-infection (dpi)), late infected BCA-treated 60 dpi and infected praziquantel (PZQ)-treated groups. Parasitological, histopathological examination and immunohistochemical staining of transforming growth factor (TGF)-β, inducible nitric oxide synthase (iNOS) and cyclooxygenase (COX-2) were investigated in liver sections. Cytochrome P450 (CYP450) gene expression of *S. mansoni* was evaluated by quantitative real-time polymerase chain reaction **(**RT-qPCR). A single dose of BCA significantly reduced worm burden in early (82.14%) and late infection (77.74%), mean tissue egg load in early (7.27 ± 0.495) and late BCA administration (7.63 ± 0.435) and decreased granuloma size. CYP450 mRNA expression was significantly reduced in early BCA treatment as compared to late treatment which emphasizes that early administration of BCA had more pronounced effects on worms than late administration. Both early and late BCA administration led to significant reduction in inflammatory cytokines as TGF and iNOS. Although the reduction of TGF and iNOS in BCA-treated mice was superior to PZQ, no statistically significant differences were noted. However, a significant downregulation of COX2 was noted in hepatocytes as compared to both infected control and PZQ-treated mice. BCA has schistosomicidal, anti-inflammatory, antioxidant and anti-fibrotic effects and could be regarded as a potential drug in schistosomiasis treatment.

A Cluster Randomized Phase 3 Trial of Bovine Vaccination to Enhance Control of Human Schistosomiasis in Asia.

Ross AG, Harn DA, Chy D, Inobaya M, Guevarra JR, Shollenberger L, Li Y, McManus DP, Gray DJ, Williams GM.
01-02-2023
Int J Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/36736992/

Objective: Schistosomiasis is a neglected tropical parasitic disease caused by blood flukes of the genus Schistosoma. Schistosoma japonicum is zoonotic in China, the Philippines, and Indonesia, with bovines acting as major reservoirs of human infection. The primary objective of the trial was to examine the impact of a combination of human mass chemotherapy, snail control through molluscicide, and SjCTPI bovine vaccination on the rate of human infection. Methods: A 5-year phase IIIa cluster randomized control trial was conducted among 18 schistosomiasis-endemic villages comprising 18,221 residents in Northern Samar, The Philippines. Results: Overall, bovine vaccination resulted in a statistically significant decrease in human infection (relative risk [RR] = 0.75; 95% confidence interval [CI] = 0.69 to 0.82) across all trial follow-ups. The best outcome of the trial was when bovine vaccination was combined with snail molluscicide. This combination resulted in a 31% reduction (RR = 0.69; 95% CI = 0.61 to 0.78) in human infection. Conclusion: This is the first trial to demonstrate the effectiveness of a bovine vaccine for schistosomiasis in reducing human schistosome infection. The trial is registered with Australian New Zealand Clinical Trials Registry (ACTRN12619001048178).

Evaluation of β-lapachone-methyl-β-cyclodextrin inclusion complex prepared by spray drying and its application against different developmental stages of Schistosoma mansoni in murine model.

Soares RN, Ximenes ECPA, Araújo SB, Silva RLD, Souza VMO, Coelho LCBB, Neto JLF, Neto PJR, Araújo HDA, Aires AL, Albuquerque MCPA.
01-02-2023
Chem Biol Interact.
https://pubmed.ncbi.nlm.nih.gov/36736872/

Activity of N-phenylbenzamide analogs against the neglected disease pathogen, Schistosoma mansoni.

Kanyanta M, Lengwe C, Mambwe D, Francisco KR, Liu LJ, Uli Sun Y, Amarasinghe DK, Caffrey CR, Mubanga Cheuka P.
31-01-2023
Bioorg Med Chem Lett.
https://pubmed.ncbi.nlm.nih.gov/36736493/

For the Schistosoma mansoni flatworm pathogen, we report a structure-activity relationship of 25 derivatives of the N-phenylbenzamide compound, 1 (MMV687807), a Medicines for Malaria Venture compound for which bioactivity was originally identified in 2018. Synthesized compounds were cross-screened against the HEK 293 mammalian cells. Compounds 9 and 11 were identified as fast-acting schistosomicidal compounds whereby adult worm integrity was severely compromised within 1 h. Against HEK 293 mammalian cells, both compounds exhibited high CC_{50} values (9.8 ± 1.6 and 11.1 ± 0.2 μM respectively) which could translate to comfortable selectivity. When evaluated in a concentration-response format, compound 9 was active in the nanomolar range (EC_{50} = 80 nM), translating to a selectivity index of 123 over HEK 293 cells. The data encourage the further investigation of N-phenylbenzamides as antischistosomals.

A review on innovative optical devices for the diagnosis of human soil-transmitted helminthiasis and

schistosomiasis: from research and development to commercialization.

Meulah B, Bengtson M, Lieshout LV, Hokke CH, Kreidenweiss A, Diehl JC, Adegnika AA, Agbana TE.
Feb-2023
Parasitology.
https://pubmed.ncbi.nlm.nih.gov/36683384

Helminth species-specific effects on IFN-γ producing T cells during active and latent tuberculosis.

Kiflie A, Bewket G, Tajebe F, Abate E, Schön T, Blomgran R.
20-01-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/36662839/

Background: Interferon-γ (IFN-γ) is a key cytokine inducing protective immune responses during tuberculosis (TB) infection. Helminth-induced immune responses may affect IFN-γ production by T cells, although its connection with disease severity and immune recovery during treatment is unexplored. We investigated the species-specific effect of helminths on the IFN-γ production by T cells in relation to disease severity during active and latent TB infection (LTBI). Methods: In this study, 69 active pulmonary TB patients (PTB), 28 with LTBI and 66 healthy controls were included. Active TB was diagnosed using GenXpert MTB/RIF while QuantiFERON test (QFT) was used for the screening of healthy community controls (CCs) and for the diagnosis of LTBI. Helminth infection was identified by routine diagnosis whereas clinical disease severity was evaluated by the TB score. Intracellular IFN-γ production of T cells in stimulated peripheral blood mononuclear cells (PBMCs) was analyzed by flow cytometry using TB antigens (PPD), the polyclonal T cell activator staphylococcal enterotoxin B (SEB), or medium as unstimulated control. Results: Helminth infected CCs and LTBI subjects showed a significant reduction of IFN-γ+ CD4+ T cells by PPD-stimulation compared to non-helminth infected control groups. The significant reduction in the frequency of IFN-γ+ T cells in both latent and active PTB patients following SEB stimulation was mostly attributed to Schistosoma mansoni infection, whereas Ascaris lumbricoides, Schistosoma mansoni, and hookworm infection contributed equally in CCs. Following anti-helminthic and anti-TB treatment for 2 months, the frequency of IFN-γ+ CD4 T cells in helminth coinfected PTB was restored to levels of helminth negative PTB before treatment. Helminth coinfected PTB patients with an intermediate and severe clinical course had reduced capacity for production of IFN-γ+ T cells compared to the corresponding non-helminth infected PTB. Conclusion: We found a reduction in IFN-γ producing T cells by helminth coinfection which was restored following anti-helminthic treatment. This reduction was helminth species-dependent in an exploratory sub-analysis and correlated to increased disease severity.

Deficiency in TLR4 impairs regulatory B cells production induced by Schistosome soluble egg antigen.

Tian F, Xian K, Yang B, Duan Q, Qian L, Shi C.
Feb-2023
Mol Biochem Parasitol.
https://pubmed.ncbi.nlm.nih.gov/36450338/

Regulatory B cells (Bregs) producing IL-10 have negative regulatory function. Several studies have shown the important roles for Toll-like receptor 2 (TLR2), TLR4, and TLR9 ligation in the development of Bregs. We have reported that Schistosome soluble egg antigen (SEA) induced the production of Bregs. However, it remains unclear whether such activation is via the TLR pathway. The present study showed that IL-10 and TLR4 mRNA expression in spleen B cells of significantly increased in C57BL/10 J mice spleen B cells following SEA stimulation. The level of secreted IL-10 and IL-10^{+} B cell proportion decreased in spleen B cells derived from TLR4-deficient C57BL/10ScNJ (TLR4$^{-/-}$) mice following SEA or LPS stimulation compared with C57BL/10 J mice. The CD1d^{hi}CD5^{+} B cells proportion decreased in spleen B cells of TLR4$^{-/-}$ mice following SEA stimulation compared with control mice. NF-κB, ERK, p38MAPK and JNK signal transduction inhibitors significantly suppressed IL-10 secretion in CD1d^{hi}CD5^{+} B cells induced by SEA or LPS. The phosphorylation levels of IκBα, p65, ERK, JNK and p38 were increased in CD1d^{hi}CD5^{+} B cell of C57BL/10 J mice treated with LPS or SEA. In conclusion, this study suggests that TLR4 plays a critical role in Bregs activation induced by SEA. And the TLR4-triggered NF-κB and MAPK pathways activation in CD1d^{hi}CD5^{+} B cells stimulated with SEA. The findings elucidated the mechanism of SEA induction of CD1d^{hi}CD5^{+} B cells and helped us to understand the immune regulation during Schistosoma japonicum infection.

Pathogenic Interleukin-10 Receptor Alpha Variants in Humans - Balancing Natural Selection and Clinical Implications.

Aschenbrenner D, Ye Z, Zhou Y, Hu W, Brooks I, Williams I, Capitani M, Gartner L, Kotlarz D, Snapper SB, Klein C, Muise AM, Marsden BD, Huang Y, Uhlig HH.
Feb-2023
J Clin Immunol.
https://pubmed.ncbi.nlm.nih.gov/36370291/

Chemically Diverse S. mansoni HDAC8 Inhibitors Reduce Viability in Worm Larval and Adult Stages.

Noce B, Di Bello E, Zwergel C, Fioravanti R, Valente S, Rotili D, Masotti A, Salik Zeya Ansari M, Trisciuoglio D, Chakrabarti A, Romier C, Robaa D, Sippl W, Jung M, Häberli C, Keiser J, Mai A.
01-02-2023
ChemMedChem.
https://pubmed.ncbi.nlm.nih.gov/36250286/

Evidence for local transmission and maintenance of schistosomiasis in an urban neighbourhood in Northeast Brazil.

Chaves CF, Sabino-Santos G, Cedraz FM, Santos-Muccillo P, Filho JR, Zanardi VS, Moretto VT, Santos APC, Simões F, Barbosa LM, Silva LK, Reis MG, Blanton RE.
Nov-2022
Transbound Emerg Dis.
https://pubmed.ncbi.nlm.nih.gov/36057790/

Schistosomiasis is a tropical neglected disease commonly associated with rural areas; however, urban schistosomiasis has been reported worldwide, and increasing urbanization is one of the most important demographic shifts of the 20th and now 21st centuries. The pattern of urbanization is not uniform so that within the same city the rates and sources of population increase vary. Here, we report on the parasite composition in one neighbourhood in the metropolitan area of Salvador, Bahia, Brazil. Using epidemiological data and population genetics, we find evidence for local transmission and maintenance of Schistosoma mansoni infection within an urban population and little contribution from rural-urban migration. Our findings provide direction for local mitigation strategies and to assist the public living in this neighbourhood to interrupt the local transmission cycle.

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

Demographic profile of HIV and helminth-coinfected adults in KwaZulu-Natal, South Africa.

Mpaka-Mbatha MN, Naidoo P, Islam MM, Singh R, Mkhize-Kwitshana ZL.
09-01-2023
S Afr J Infect Dis.
https://pubmed.ncbi.nlm.nih.gov/36756244/

A Case Report on Biliary Ascariasis.

Kolleri JJ, Thabet AMJ, Mohammedain S, Sajid S, Ahmed Z, Momin U.
03-01-2023
Cureus.
https://pubmed.ncbi.nlm.nih.gov/36741635/

Biliary Ascariasis occurs when Ascaris lumbricoides worms invade the biliary system. It may cause biliary obstruction, cholangitis, cholecystitis, or acute pancreatitis. We report a case of a 37-year-old female patient who presented with a history of upper abdominal pain, nausea, vomiting, and weight loss for two weeks. Ultrasound showed dilated common bile duct with linear tubular echogenic structure in the common bile duct and bowel loops. Endoscopic Retrograde Cholangio pancreatography (ERCP) revealed large adult worms confirming the diagnosis of Ascariasis.

Helminth species-specific effects on IFN-γ producing T cells during active and latent tuberculosis.

Kiflie A, Bewket G, Tajebe F, Abate E, Schön T, Blomgran R.
20-01-2023
PLoS Negl Trop Dis.
https://pubmed.ncbi.nlm.nih.gov/36662839/

Background: Interferon-γ (IFN-γ) is a key cytokine inducing protective immune responses during tuberculosis (TB) infection. Helminth-induced immune responses may affect IFN-γ production by T cells, although its connection with disease severity and immune recovery during treatment is unexplored. We investigated the species-specific effect of helminths on the IFN-γ production by T cells in relation to disease severity during active and latent TB infection (LTBI). Methods: In this study, 69 active pulmonary TB patients (PTB), 28 with LTBI and 66 healthy controls were included. Active TB was diagnosed using GenXpert MTB/RIF while QuantiFERON test (QFT) was used for the screening of healthy community controls (CCs) and for the diagnosis of LTBI. Helminth infection was identified by routine diagnosis whereas clinical disease severity was evaluated by the TB score. Intracellular IFN-γ production of T cells in stimulated peripheral blood mononuclear cells (PBMCs) was analyzed by flow cytometry using TB antigens (PPD), the polyclonal T cell activator staphylococcal enterotoxin B (SEB), or medium as unstimulated control. Results: Helminth infected CCs and LTBI subjects showed a significant reduction of IFN-γ+ CD4+ T cells by PPD-stimulation compared to non-helminth infected control groups. The significant reduction in the frequency of IFN-γ+ T cells in both latent and active PTB patients following SEB stimulation was mostly attributed to Schistosoma mansoni infection, whereas Ascaris lumbricoides, Schistosoma mansoni, and hookworm infection contributed equally in CCs. Following anti-helminthic and anti-TB treatment for 2 months, the frequency of IFN-γ+ CD4 T cells in helminth coinfected PTB was restored to levels of helminth negative PTB before treatment. Helminth coinfected PTB patients with an intermediate and severe clinical course had reduced capacity for production of IFN-γ+ T cells compared to the corresponding non-helminth infected PTB. Conclusion: We found a reduction in IFN-γ producing T cells by helminth coinfection which was restored following anti-helminthic treatment. This reduction was helminth species-dependent in an exploratory sub-analysis and correlated to increased disease severity.

Soil-transmitted helminthic vaccines: Where are we now?

Wong MTJ, Anuar NS, Noordin R, Tye GJ.
Mar-2023
Acta Trop.
https://pubmed.ncbi.nlm.nih.gov/36586174/

It has been tested and proven that vaccination is still the best strategy to combat infectious diseases. However, to date, there are still no vaccines against human soil-transmitted helminthic diseases, despite their high prevalence globally, particularly in developing countries and rural areas with tropical climates and poor sanitation. The development of vaccines against helminths is riddled with obstacles. Helminths have a complex life cycle, multiple stages within the same host with stage-specific

antigen expression, and the ability to regulate host immune reactions to evade the immune response. These elements contribute to the main challenge of helminthic vaccines: the identification of effective vaccine candidates. Therefore, this article reviews the current progress and potential future direction of soil-transmitted helminthic vaccines, particularly against Trichuris trichiura, Ascaris lumbricoides, Strongyloides stercoralis, Necator americanus and Ancylostoma duodenale. The study design employed was a systematic review, using qualitative meta-summary synthesis. Preclinical studies and clinical trials on the development of protein subunit vaccines against the five soil-transmitted helminths were searched on PubMed and Scopus. Effectiveness was indicated by a reduction in worm burden or larval output, an increase in specific IgG levels, or an increase in cytokine production. Our findings show that only the hookworm vaccine against N. americanus is in the clinical trial phase, while the rest is still in exploratory research and pre-clinical development phase.

A Pilot Comparison of Fixatives for Hookworm Real-time Polymerase Chain Reaction.

Bradbury R, Inagaki K, Singh G, Agana U, Patterson K, Malloch L, Rodriguez E, Qvarnstrom Y, Hobbs CV.
12-12-2022
Am J Trop Med Hyg.
https://pubmed.ncbi.nlm.nih.gov/36509060/

Gale

Evaluating the current management approach of scabies at selected primary health care in the Deder district, Ethiopia.

Jira SC, Matlhaba KL, Mphuthi DD.
19-01-2023
Heliyon.
https://pubmed.ncbi.nlm.nih.gov/36747940/

Background: Scabies is endemic in many resource-poor tropics, with an estimated average prevalence of 5-10% in children. The burden of scabies infestation and its complications place a huge cost on health systems. The aim of this study was to evaluate the current management approach to scabies at primary health care facilities in the Deder district, Ethiopia. Methods: A qualitative research design was used to address the research objectives. Data were collected using in-depth interviews with 18 health care providers. Thematic analysis was performed on the verbatim transcriptions using Tesch's approach. Eight themes emerged after data analysis. These experiences regarding scabies management; medicine supply and accessibility for scabies management; unavailability of scabies management guidelines; scabies data management; suggestions regarding better management; linkage and communication at different levels; facilitators to scabies management; and health education regarding scabies. Results: The study findings verified that there are different difficulties and challenges in diagnosing and managing scabies that need serious redress about improving the management of scabies in primary health care. These challenges contribute to low quality of health service with undesirable health outcomes. Conclusions: In the health system, one of the imperatives is delivering appropriate health care management to those in need. The absence of constant and proper management of scabies in primary health care due to different challenges may cause the disease cycle to continue and affect the efforts directed at reducing the disease burden in the area.

Epidural anesthesia in a scabies-infested pregnant woman.

Heras SE, Becerra IA, Caparros A, Hogeboom AG.
06-02-2023
Minerva Anestesiol.
https://pubmed.ncbi.nlm.nih.gov/36744368/

Crusted scabies in AIDS patient, a clinical challenge to be sorted out with a simple bedside test.

Indira B, Darsan S.
Juil-Dec 2022
Indian J Sex Transm Dis AIDS.
https://pubmed.ncbi.nlm.nih.gov/36743101/

Norwegian or crusted scabies is a highly contagious severe variant of scabies described first among leprosy patients in Norway in 1848 by Boeck and Danielsen. Herein, we report a case of crusted scabies in an AIDS patient with large hyperpigmented macules covered with thick crusts present over the axilla, inguinal region, and gluteal region. Treatment started immediately with ivermectin, permethrin, and keratolytics after doing KOH microscopy. Mite population may exceed 1 million/person. Hence, it is highly infectious and can set off epidemics of scabies in home or institutions.

Scabies: an update for community nurses.

Nazarko L.
02-02-2023
Br J Community Nurs.
https://pubmed.ncbi.nlm.nih.gov/36735359/

Community nurses may encounter scabies in homeless people, those living in prisons, people living at home or in people living in care homes. Scabies is more prevalent in older adults and there is evidence that this infection is becoming more prevalent and difficult to treat. The community nurse can help reduce such risks. This article aims to enable the community nurse to be aware of the clinical features of scabies and how it is treated.

[Translated article] Diagnosis and Clinical Characteristics of Scabies in a Tertiary Care Hospital During the SARS-CoV-2 Pandemic: A Descriptive Study.

Aguado Vázquez Á, Gegúndez Hernández H, Melgosa Ramos FJ, Díaz Corpas T.
Fev-2022
Actas Dermosifiliogr.
https://pubmed.ncbi.nlm.nih.gov/36464010/

[Translated article] Epidemic Scabies: New Treatment Challenges in an Ancient Disease.

Lluch-Galcerá JJ, Carrascosa JM, Boada A.
Fev-2022
Actas Dermosifiliogr.
https://pubmed.ncbi.nlm.nih.gov/36462668/

Sarcoptic mange is an emerging threat to biodiversity in the Qinling Mountains in China.

Wu Q, Chen L, Zhang Q, Jin X, Tang L, Zhang X, Liu Y, Li J, Pei J, Zhu Q, Jin S, Zhao Q, Shen J, Zhao Z, Jin Y, He H, Gu X, Yang M.
Nov-2022
Transbound Emerg Dis.
https://pubmed.ncbi.nlm.nih.gov/36251176/

Sarcoptic mange, a disease caused by the burrowing mite Sarcoptes scabiei, is globally endemic and an emerging threat to wildlife. Although many studies have shown that wildlife diseases play key roles in biodiversity conservation, knowledge about sarcoptic mange is still insufficient. In this study, we aim to improve the understanding of the impacts of sarcoptic mange on wildlife populations, the mechanisms involved in its eco-epidemiology and the associated risks to public and ecosystem health by investigating mass death events in gorals and serows in the Qinling Mountains. We conducted interviews with practitioners and local people in the central Qinling Mountains. From the same locations, we collected 24 cutaneous samples from various animals and surveillance data from infrared cameras. Pathological, parasitological and microbiological examinations of the samples were performed. Mite-induced cutaneous lesions, mites and eggs were observed in samples from dead gorals and one dead serow but not in other species. Molecular analysis confirmed the mites to be S. scabiei and shared the same cox 1 genotype. The data obtained from the interviews and infrared cameras indicated that the death of wildlife was related to sarcoptic mange infection and that there had been a decrease in the goral population since the outbreak of the disease. We confirmed that sarcoptic mange was the major cause of the mass death events and may have spread from the western to eastern Qinling Mountains. Based on our findings, we propose several protection strategies to help preserve biodiversity in the Qinling Mountains.

Comparative genomics of Sarcoptes scabiei provide new insights into adaptation to permanent parasitism and within-host species divergence.

Xu J, Wang Q, Wang S, Huang W, Xie Y, Gu X, He R, Peng X, Wu S, Yang G.
Nov-2022
Transbound Emerg Dis.
https://pubmed.ncbi.nlm.nih.gov/36134513/

Sarcoptes scabiei is the causative agent of a highly contagious skin disease in humans and more than 100 mammals. Here, we reported the first chromosome-level reference genome of S. scabiei isolated from rabbits, with a contig N50 size of 5.92 Mb, a total assembled length of 57.30 Mb, ~12.65% repetitive sequences and 9333 predicted protein-coding genes. The phylogenetic tree based on 1338 shared high-confidence single-copy orthologous genes estimated that the mammalian ectoparasite S. scabiei and the plant-feeding mite Tetranychus urticae separated ~340 million years ago. Both neighbour-joining tree and principal component analysis of 20 mite populations isolated from four hosts (humans, pigs, dogs and rabbits) distributed in three countries (China, Australia and the USA) consistently supported genetic subdivisions according to host species rather than geographical location. The demographic history of S. scabiei reconstructed by multiple sequentially Markovian coalescent analysis suggested that S. scabiei isolated from rabbits, humans, dogs and pigs diverged ~5000 years ago. Investigation of the homeobox (Hox) genes revealed that S. scabiei contains 8 of 10 canonical Hox genes that are present in the arthropod ancestor, and the absence of the Abd-A gene may correlate with the long gap between their front and back legs. Comparative genomics demonstrated that genes specific to scabies mites were mainly enriched in nutrition digestive systems, whereas genes in the families that involved detoxification (cytochrome P450, carboxyl/cholinesterases and the ATP-binding cassette transporter C group) were extremely contracted compared with that of other mites analysed in this study. Selective sweep analysis of mite populations from various pairs of two out of the four host species revealed that the strongest selective sweep signals were mainly enriched in cysteine-type peptidase activity and apoptosis. The results provided clues for the mechanisms of S. scabiei adaptation to a permanent parasitic lifestyle and knowledge that would enable further control of this highly contagious skin disease.

Epidemic Scabies: New Treatment Challenges in an Ancient Disease.

Lluch-Galcerá JJ, Carrascosa JM, Boada A.
Feb-2023
Actas Dermosifiliogr.
https://pubmed.ncbi.nlm.nih.gov/35963332/

Scabies, which is among the most prevalent diseases worldwide, is becoming more frequent in Spain. The problems of this epidemic can be explained by several factors: improper application or prescription of treatments, resistance or reduced sensitivity to topical treatments, and poor understanding of the parasite and contagion. We require a new evidence-based approach to therapy that takes these problems into consideration. If symptoms persist after proper treatment, it is important to identify the reason for failure and standardize our approach. In refractory cases, the prescriber should prioritize oral medication, indicate a higher dose, combine treatments, or evaluate the use of off-label treatments in certain populations. The availability of new medications - such as spinosad or, especially, moxidectin- offer hope for bringing this disease under control.

Diagnosis and Clinical Characteristics of Scabies in a Tertiary Care Hospital

During the SARS-CoV-2 Pandemic: A Descriptive Study.

Aguado Vázquez Á, Gegúndez Hernández H, Melgosa Ramos FJ, Díaz Corpas T.
Feb-2023
Actas Dermosifiliogr.
https://pubmed.ncbi.nlm.nih.gov/35659613/

Morsures de serpent

Epidemiology of snakebites in Colombia (2008-2016).

León-Núñez LJ, Camero-Ramos G, Gutiérrez JM.
06-02-2023
Rev Salud Publica (Bogota).
https://pubmed.ncbi.nlm.nih.gov/36753152/

Objective: To describe the main epidemiological features of snakebites in Colombia during the period 2008 to 2016. Methods: A retrospective (quantitative) descriptive analytical empirical study was carried out, based on the official databases of the Public Health Surveillance in the Integral Information System of the Social Protection (SISPRO) and the Surveillance System in Public Health (Sivigila) of the reported cases of snakebites in Colombia for that period. Results: In total, 37 066 cases were reported, with annual incidences ranging from 7.0 (2008) to 9.7 (2011 and 2012) cases per 100,000 population. Mortality rates ranged from 0.059 (2013) to 0.091 (2011) deaths per 100 000 population, with case fatality rates ranging from 0.6% (2013) to 1.0% (2010). Indigenous and Afro-Colombian populations were highly affected, and highest incidences occurred in males, and in people living in rural areas. The average age of affected people is 31.7 years (95% CI 28.3 34.5). The regions with higher incidence are Amazonia and Orinoquia. Species of the genus Bothrops are responsible for the highest number of bites (64.5%), owing to their wide distribution in Colombia. Regarding clinical manifestations, pain and edema were observed in 86.9% and 78.8% of patients, respectively. Cellulitis and abscesses were the most frequent local complications of these envenomings. Conclusions: Results underscore the relevance of snakebite envenoming in Colombia, and provide information for improving the public health attention to these envenoming.

Does snake envenoming cause chronic kidney disease? A cohort study in rural Sri Lanka.

Waiddyanatha S, Silva A, Weerakoon K, Siribaddana S, Isbister GK.
Jan-2023
Clin Toxicol (Phila).
https://pubmed.ncbi.nlm.nih.gov/36440905/

Background: There is limited information on the risk of chronic kidney disease (CKD) following snakebite and its relationship with chronic interstitial nephritis in agricultural communities (CINAC). We aimed to investigate CKD in patients with a confirmed snakebite in rural Sri Lanka. Methods: Patients prospectively recruited to the Anuradhapura snakebite cohort with authenticated bites were followed up. Two groups of patients were followed up: 199 patients in group I with a snakebite (August 2013-October 2014), reviewed after 4 years, and 168 patients in group II with a snakebite (May 2017-August 2018), reviewed after one year, with serum creatinine (estimated glomerular filtration rate [eGFR]) and urinary albumin to creatinine ratio (ACR). Results: There were 12/199 (6%) in group I and 9/168 (5%) in group II with AKI following snakebite; 3/12 in group I and 2/9 in group II had haemodialysis. On review after 1 and 4 years, no patient had CKD and all had an eGFR ≥60 mL/min/1.73m^2. Of 234 patients with a creatinine measured on discharge, 17/140 in group I and 11/94 in group II had a low eGFR (<60mL/min/1.73m^2). In group I, 14/17 had a normal eGFR after four years, including 11/12 who had AKI following snakebite, and the 3/17 with a low eGFR on review had CKD or co-morbidities for CKD. In group II, 10/11 had a normal eGFR after one year, including all nine patients with AKI following snakebite, and the one patient with a low eGFR on review had CKD. Fifty patients (25%) in group I and 43 (26%) in group II had a high urinary ACR on review, all but two in each group had microalbuminuria. Multivariate logistic regression showed in group I that only comorbidities for CKD were associated with high urinary ACR, and in group II comorbidities for CKD, snakebite associated AKI and snake type were associated with high urinary ACR. All nine patients from both groups with a low eGFR (CKD stages 3-5) had CKD prior to the snakebite or treatment for hypertension or diabetes. Conclusion: There was no significant association between snakebite-associated AKI and CKD in patients followed up from a snakebite cohort post-bite. Microalbuminuria was common in these patients but likely associated with hypertension, diabetes mellitus and CINAC in this rural farming population.