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TABLE OF CONTENTS

Distribution of anopheles species, Biting activity and malaria transmission role of Vectors in ea so commune, ea ka district, Dak lak province, 2020 4

Nguyen Quang Thieu, Pham Van Quang, Vu Viet Hung, Nguyen Anh Tuan, Tran Thi Huyen, Nguyen Van Dung

Malaria parasite density estimation using actual and assumed white blood cell counts in *Plasmodium falciparum*-infected patients 13

Huynh Hong Quang, Bui Quang Phuc, Chau Van Khanh, Pham Thanh Hien, Tran Tinh Hien, Nguyen Thanh Thuy Nhien, Nguyen Duc Hong

Evaluation of hematological changes in uncomplicated *plasmodium falciparum* malaria patients before and after artesunate-mefloquine treatment (2019-2020) 19

Huynh Hong Quang, Nguyen Duc Hong, Tran Tinh Hien, Nguyen Thanh Thuy Nhien, Bui Quang Phuc

The situation and some associated factors to seropositive *Toxocara* spp. Among people at ninh thuan province 27

Thai Phuong Phien, Truong Van Hoi, Le Vu Chuong, Than Trong Quang, Nguyen Nhi Linh, Nguyen Thi Ngoc Anh, Le Trong Luu, Do Thuy Dung, Nguyen Hoang Dieu, Le Van Thanh

Study on correlation between haematological indicators and infection by hookworm/ small liver fluke at the national institute of malariology - parasitology and entomology in 2020 34

Nguyen Thi Phuc and Nguyen Thi Hoang Lan Quynh

Profile of clinical manifestations-laboratory findings in fascioliasis-confirmed pregnant women in Vietnam 40

Huynh Hong Quang, Tran Huy Tho, Le Dinh Vinh Phuc et al.,

Development and validation of an hplc method for the simultaneous determination of pyriproxyfen in insecticide formulations 52

Nguyen Thi Dung, Ha Thi Hoi, Vu Manh Hung, Le Trung Kien

The dengue situation and characteristics of *Aedes aegypti* mosquito in Dien Khanh district, Khanh Hoa province period 2015- 2019 59

Le Trung Kien, Tran Thanh Duong, Nguyen Thi Lien Huong

Mosquito repellency efficacy of new deet formulation on cotton fabric in laboratory 69

Pham Van Quang, Tran Thanh Duong, Le Trung Kien, Đoan Minh Khiet

Development and validation of an analytical method using high performance liquid chromatography (HPLC) to determine pyriproxyfen in insecticide formulations 81

Nguyen Thi Dung, Ha Thi Hoi, Vu Manh Hung, Le Trung Kien

DISTRIBUTION, BITING ACTIVITY AND MALARIA PARASITE INFECTION RATE OF OF ANOPHELES MOSQUITOES IN EA SO COMMUNE, EA KA DISTRICT, DAK LAK PROVINCE, 2020

Nguyen Quang Thieu, Pham Van Quang, Vu Viet Hung,
Nguyen Anh Tuan, Tran Thi Huyen, Nguyen Van Dung
National Institute of Malariology, Parasitology and Entomology

Abstract

Two entomological surveys were conducted in June and November 2020 in Ea So, a high malaria endemic commune of Ea Ka district, Dak Lak province, to investigate the presence, distribution, biting behaviour and malaria transmission role of Anopheles species. The routine mosquito collection methods were deployed including: Indoor human landing catch, outdoor human landing catch, indoor light trap, cattle shed collection and resting morning collection. The results showed that 11 Anopheles species were found. The main vector, An. dirus was found in the forest fringe and deep forest with the rates of 30.8% and 91.6%, respectively. The density of An. dirus was much higher in the November survey (1.19 mosquitoes/hour/person) compared to the June survey (0.08 mosquitoes/hour/person). The biting time of An. dirus was between 6pm and 12am with a peak period from 10pm to 11pm. The rate of An. dirus infected with Plasmodium vivax was 1.55%. Plasmodium falciparum was not found in An. dirus captured in the study sites.

Key words: Distribution, malaria vector, Dak Lak province.

Reviewer

Assoc. Prof. Nguyen Thi Huong Binh PhD

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MALARIA PARASITE DENSITY ESTIMATION USING ACTUAL AND ASSUMED WHITE BLOOD CELL COUNTS IN *Plasmodium falciparum* INFECTED PATIENTS

Huynh Hong Quang[1], Bui Quang Phuc[3], Chau Van Khanh[1], Pham Thanh Hien [1], Tran Tinh Hien [2], Nguyen Thanh Thuy Nhien [2], Nguyen Duc Hong[1]

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Abstract

Estimating malaria parasite density is necessary for disease management, clinical trials and drug efficacy studies. This study was conducted to compare the malaria parasite density among patients using actual white blood cell (WBC) and the assumed WBC counts (8.0 $\times 10^9$/l). A cross-sectional study was conducted in Dak Lak, Vietnam. WBC and asexual malaria parasite counts were performed on blood films. Eighty patients were enrolled. The mean (±SD) of WBCs was 5.84±1.63 $\times 10^9$/l. The median (IQR) of parasite density using the assumed WBCs (8000 cells/µl) (11057.50 [2388.50-34210.75] rings/µl) was significantly higher than that estimation based on the actual WBC count (6898.61 [1892.12-24623.10] rings/µl) ($p<0.001$). Therefore, this study recommended the use of actual WBC count to estimate malaria parasite density in P. falciparum infected patients in Dak Lak, VietNam.

Keywords: malaria; parasite density; assumed white blood cell; actual white blood cell

Reviewer

Assoc. Prof. Le Xuan Hung PhD

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EVALUATION OF HEMATOLOGICAL CHANGES IN UNCOMPLICATED *Plasmodium falciparum* MALARIA PATIENTS BEFORE AND AFTER TREATMENT WITH ARTESUNATE-MEFLOQUINE (2019-2020)

Huynh Hong Quang[1], Nguyen Duc Hong[1] Tran Tinh Hien[2], Nguyen Thanh Thuy Nhien [2], Bui Quang Phuc[3]

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Abstract

The hematological changes following treatment have been poorly understood. This study was designed to determine the hematological alterations and recovery in plasmodium falciparum infected patients, treated with Artesunate/Mefloquin. A retrospective study was conducted in Dak Lak province, located in central highland Vietnam, between August 2019 and April 2020. All data from 80 patients who were diagnosed with P. falciparum infection – including clinical characteristics, and hematological parameters in 42 days follow up – were reviewed and analyzed. The results showed that there were no anemia ($p<0.001$), no leukopenia ($p<0.001$), no leukocytosis ($p<0.001$), but thrombocytopenia ($p=0.018$) in 80 patients before treatment. There was a slightly decrease in hemoglobin (HGB) at day 7 ($p=0.05$), then HGB significantly increased at day 42 after treatment ($p<0.001$). White blood cell (WBC) and platelet (PLT) counts rapidly recovered at day 7 after treatment ($p<0.001$ and $p<0.001$, respectively). This study indicated that malaria patients treated with Artesunate/Mefloquin exhibit important changes in hematological parameters with HGB and PLT counts being the two most important changes before and after treatment. This data could be useful for detection, treatment and prevention of malaria in Vietnam.

Keywords: malaria; *plasmodium falciparum*; treatment; hematological recovery

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Reviewer:

Assoc. Prof. Le Xuan Hung PhD

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THE SITUATION AND SOME ASSOCIATED FACTORS TO SEROPOSITIVE *Toxocara* spp. AMONG PEOPLE AT NINH THUAN PROVINCE 2020

Thai Phuong Phien[1], Truong Van Hoi[1], Le Vu Chuong[2], Than Trong Quang[4], Nguyen Nhi Linh[3], Nguyen Thi Ngoc Anh[1], Le Trong Luu[2], Do Thuy Dung[1], Nguyen Hoang Dieu[1], Le Van Thanh[1]

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[3]Ninh Thuan Center for Disease Control, [4]Tay Nguyen University

Abstract

Toxocariasis is a zoonotic disease caused by a species of parasitic roundworm, commonly found in the intestines of dogs (Toxocara canis) and cats (Toxocara cati). In this study, a cross-sectional survey on 1320 subjects and face-to-face interviews with 959 people of Ninh Thuan province were conducted to determine seroprevalence and associated factors of Toxocara spp.. The study data was collected from the sero-immunological test and from face-to-face interviews using pre-designed questionaires. The results indicated the overall Toxocara spp. seropositive prevalence among people was 17.7% at Ninh Thuan province, of which the rate was highest in Ninh Phuoc district (35.4%) and lowest in Phan Rang-Thap Cham city (8.7%). The seropositive prevalence in human Toxocara was found to be associated with the factors, including age group of 3-14 (PR=1.4; p=0.01), Cham (PR=1.4; p=0.02) and K'HO (PR=3.8; p<0.001) ethnic group, farming (PR=1.9; p<0.001), primary education or lower (PR=2.0; p<0.001), living in rural areas (PR=2.6; p<0.001), difficult and extremely difficult areas (PR=2.3; p<0.001), midland and mountainous communes (PR=1.5; p<0.001), raising dogs (PR=2.2; p<0.001), drinking improperly boiled water (PR=1.6; p=0.01), contacting with cats/ dogs regularly (PR=3.2; p<0.001), regular contact with soil (PR=1.6; p<0.01), lack of hand-washing habit after contact with soil (PR=2.4; p<0.001), lack of hand-washing habit before meals (PR=1.6; p<0.01) and eosinophilia (PR=4.0; p<0.001).

Keywords: *Toxocara* spp., Seropositive, Ninh Thuan province.

Reviewer:

Assoc. Prof. Le Xuan Hung PhD

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STUDY ON CORRELATION BETWEEN HAEMATOLOGICAL INDICATOR AND INFECTION BY HOOKWORM AND SMALL LIVER FLUKE AT THE NATIONAL INSTITUTE OF MALARIOLOGY - PARASITOLOGY AND ENTOMOLOGY IN 2020

Nguyen Thi Phuc and Nguyen Thi Hoang Lan Quynh

National Institute of Malariology – Parasitology and Entomology

Abtracts

Research performed on 203 patients, who have been diagnosed with hookworm and small liver fluke at National Institute of Malariology – Parasitology and Entomology in 2020, has shown that the percentage of infected patients who have haemoglobin-decreased anemia (WHO's standard) is 12.8%. Amongst them, the percentage of hookworm-infected patients having anemia is 32%, which is higher than that of small liver fluke-infected ones (6.5%). In general, level of anemia in infected patients is mild (92.3%). However, some patients who get infected with hookworm exhibits moderate anemia (3.8%) and severe anemia (3.8%). Interm of eosinophil, the percentage of infected patients having an increase number of eosinophil is 58,6%. Amongst them, the percentage of small liver fluke-infected patients (62.7%) is higher than hookworm-infected ones (46%). The number of eosinophil shows a mild increase (48.4%), followed by a moderate raise (41.9%) and a sharp jump (9.7%). Our research has shown a reverse correlation between HGB (an indicator of anemia) and level of infection with hookworm (the number of eggs in 1 gram of stool). From that, we have suggested a regression equation to forecast changes in HGB based on Kato-Katz test.

Keywords: hookworm, small liver fluke, correlation, haematological indicator

Reviewer

Đo Trung Dung PhD.

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PROFILE OF CLINICAL MANIFESTATIONS-LABORATORY FINDINGS IN FASCIOLIASIS-CONFIRMED PREGNANT WOMEN IN VIETNAM

Huynh Hong Quang[1], Tran Huy Tho[2], Le Dinh Vinh Phuc[3] et al.,

[1] Institute of Malariology, Parasitology, and Entomology Quy Nhon

[2]National Institute of Malariology, Parasitology, and Entomology,

[3]Medic Medical Center in Ho Chi Minh city

Abstract

Fascioliasis is a disease of the hepatobiliary system, caused by Fasciola spp. that are increasing and threating of human health in the tropic zones. This study carried out to evaluate several particular fascioliasis' clinical aspects in pregnant women. Cases serie descriptive cross-sectional study design with sample size in line with hospital-based data. Total of 94 pregnant women with fascioliasis were enrolled, the major clinical symptoms of epigastric and Chauffard Rivet triangle pain (95.74%), subshoulder muscle pain (97.87%), gastrointestinal disturbances as abdominal pain plus constipation (14.89%), loosed stool (22.34%), nausea and/or vomit (29.78%), mild fever (68%), allergic reaction with pruritis and urticaria (64.89%), mild anemia (4.26%), rare symptoms may be hepatomegaly (6.38%), chest pain, dyspnoea (43.62%), jaundice (2.13%); Laboratory parameters were positive ELISA test with Fasciola gigantica Ag (95.74%), hepatobiliary lesions by ultrasound (97.87%), majority in right liver (90.32%), eosinophilia is the predominant indicator (90.42%). In pregnant women, symptoms are indistinguishable from hepatobiliary, digestive tract diseases or overlap with gestation terrains, may mimic a broad-spectrum of hepatobiliary disorders, laboratory and imaging diagnostics, especially in FasELISA, hypereosinophilia and liver lesions by ultrasound were very useful in positive diagnosis.

Key words: Fascioliasis, pregnant women, clinical and laboratory findings.

Reviewer:

Assoc. Prof. Le Xuan Hung PhD

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DEVELOPMENT AND VALIDATION OF AN HPLC METHOD FOR THE SIMULTANEOUS DETERMINATION OF PYRIPROXYFEN IN INSECTICIDE FORMULATIONS

Nguyen Thi Dung, Ha Thi Hoi, Vu Manh Hung, Le Trung Kien

National Institue of Malariology, Parasitology and Entomology

Abstact

Pyriproxyfen is an insect growth regulator that affects the physiology of morphogenesis, reproduction and embryogenesis of insects. The molecule of pyriproxyfen bears little resemblance to endogenous insect juvenile hormone (JH), but it affects JH and ecdysteroid titers in a variety of arthropods [1]. High-performance liquid chromatography with diode array (HPLC-PAD) method is a widely used for the analyses of pyriproxyfen. In this study, the development and validation of an HPLC assay for determination of pyriproxyfen in formulation products is described. On the basis of solubility and chromatographic separation with good resolution, acetonitrile–water (80+20) was selected as the mobile phase in isocratic mode with a flow rate of 1 mL/min. Chromatographic separations were performed on a ®Nucleosil 7 C18 (250 mm x 4.6 mm id, 5 µm). The retention times for pyriproxyfen was 10.2 min. Calibration curves of all studied insecticides were linear in the concentration range of 0.5 to 2.5 mg/mL, with R^2>0.99. Interday and intraday precisions were RSD% with <0.51% and <0.64%, respectively.

Keywords: Pyriproxyfen, HPLC, validation, selectivity, precision, accuracy

Reviewer

Assoc. Prof. Ho Dinh Trung PhD

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THE DENGUE SITUATION AND CHARACTERISTICS OF *Aedes aegypti* MOSQUITO IN DIEN KHANH DISTRICT, KHANH HOA PROVINCE PERIOD 2015- 2019

Le Trung Kien[1], Tran Thanh Duong[1], Nguyen Thi Lien Huong[2]

[1] National Institute of Malariology, Parasitology and Entomology

[2]Vietnam Health and Environmental Management Agency, Ministry of Health

Abstract

A study on Dengue cases and Ae.aegypti vector was conducted in Dien Khanh district (Khanh Hoa province) from 2015 to 2019. Dengue situation of Dien Khanh, Khanh Hoa during 2015-2019 in this site was complicated with 1.599 cases in 2015. There are 2 peak of Dengue outbreak in Dien Khanh with first peak in January and second peak in October. Aedes aegypti is predominant species, representing 98% of total number of collected Aedes mosquitoes. This species prefers resting indoors of bedroom and kitchen on shadow sites such as the hanging clothes and wall surfaces having high position of about 0,5-1,0 m from the floor. The main breeding sites of Ae.aegypti was flower vats, waste containers and bonsai water tanks. There are 2 peak of mosquito density and house index of Ae.aegypti adult during 3 months (January-March) and second peak from July- November. For Breteau, container and house index of Ae.aegypti larvae were similar with mosquito index. Ae.aegypti was collected in Dien Khanh district was resistant to 5 insecticides of Pyrethroid group (alphacypermethrin, deltamethrin, lambda-cyhalothrin, permethrin and cyfluthrin with mosquito mortality rate 27- 78%. However, larvae and adult of Ae.aegypti were susceptible to temephos belong to Organophosphate class.

Keywords: Dengue, Dien Khanh, *Aedes aegypti*, resistance

Reviewer

Assoc. Prof. Vu Duc Chinh PhD

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MOSQUITO REPELLENCY EFFICACY OF NEW DEET FORMULATION ON COTTON FABRIC IN LABORATORY

Pham Van Quang, Tran Thanh Duong, Le Trung Kien, Đoan Minh Khiet

National Institute Of Malariology, Parasitology And Entomology

Abstract

This report studied the repellent effectiveness of a new mosquito repellent formulation containing 16% N, N-diethyl-m-toluamide (DEET) treated on cotton fabric in laboratory. The study was conducted from 6/2020 to 9/2020. The results revealed that treated fabric with new formulation in different DEET concentrations could repellent Ae. aegypti. The average repellency rate of treated fabric with active ingredient concentration at 1%, 2.5%, 5%, 7.5% and 10% were 47.61%, 91.39%, 99.72%, 100% respectively. And no undesirable effects were reported from volunteers who conducted experiments directly.

Keywords: *Repellency, DEET DEET, Aedes aegypti, Dengue, cotton fabric.*

Reviewer

Assoc. Prof. Pham Thi Khoa PhD

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DEVELOPMENT AND VALIDATION OF AN ANALYTICAL METHOD USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC) TO DETERMINE PYRIPROXYFEN IN INSECTICIDE FORMULATIONS

Nguyen Thi Dung, Ha Thi Hoi, Vu Manh Hung, Le Trung Kien

National Institue of Malariology, Parasitology and Entomology

Abstract

A simple and rapid analytical method, appropriate for quality control of insecticides containing Pyriproxyfen, was development and validated by high performance liquid chromatography. It was based on an isocratic elution in a Nucleosil 7 C18 column using a mobile phase composition of Acetonitrile and water (80:20 v/v); flow rate of 1.0 mL/min and the analyte was monitored at 254 nm. The linearity ranged between 0.5-2.5 mg/mL, the relative standard deviation (RSD) was 0.51% for intra and 0.64 % for inter-day precision. The method demonstrated to be rugged when applied in an equivalent chromatographic system and the excipients showed no interference in pyriproxyfen quantification, hence specific.

Keywords: Pyriproxyfen, HPLC, validation**,** Quantitative analysis; Quality control method.

Reviewer

Assoc. Prof. Nguyen Thi Huong Binh PhD

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I. GENERAL REQUIREMENTS

- The article must be typed in Unicode font, Times New Roman, 12 pt font size, except for the title, of which the font size is 14 pt and keywords, of which the font size is 11 pt.

- Each article must not exceed 4,000 words (about 7-8 pages of A4 size) including tables, illustrations and references.

- The article should be on A4 paper with margins of 2.5 cm (top and bottom), 2.2 cm (left), and 1.8 cm (right); first line indent of 1 cm; single line spacing; paragraph spacing of 3 pt (above and below).

- The manuscript must be paginated in the middle at the bottom of the page.

- Names of drugs and chemicals should be kept unchanged in Latin (except for the names of antimalarials which have already been localized in the book "Guidelines for Malaria Diagnosis and Treatment" by Ministry of Health).

- Latin names of insects, parasites, animals, plants, microorganisms ... should be written as prescribed by the International Nomenclature.

- Terms should be consistent with the Vietnamese encyclopedia. Vietnamese nouns if translated from a foreign language must be accompanied by the original writing. Abbreviations must have captions.

- Tables, charts, graphs (format: .jpeg, .pdf, ...) should be positioned properly in the manuscript; and the original files should also be sent separately to the editorial board. A descriptive title should be placed above each table, and the caption is placed directly below each image, picture, and graph.

- The title should be followed by no punctuation.

II. ORDER AND PRESENTATION OF CONTENT ITEMS IN THE ARTICLE

The article is presented in 18 major items, of which only 5 items are numbered. The order of items in the article is as follows:

TITLE (14pt font size, uppercase, bold, except for species names which are not capitalized; central alignment).

Author et al. (Authors' names are listed in order according to their contribution to the work, bold text, left alignment).

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Abstract (250 words or less, presenting all the basic results and conclusions of the study, italic, justified).

Key words:(including 3-6 words or phrases, expressing the main problem of the study, 11 pt font size, italic, justified)

1. INTRODUCTION (This is an introduction to research objectives in relation to other studies of the same field that have been done before, no more than 01 A4 page).

2. MATERIALS AND METHODS (This is a brief and informative description about the study subject and method. The new first-implemented procedures should be described in details with specific citations and approval from the Institutional Review Board (IRB). The paper can be divided into the following sections:

2.1. Study site and timeframe (compulsory)

2.2. Subjects (compulsory)

2.3. Methods (compulsory)

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(Figures and Tables are included. They should be numbered, clearly and concisely presented with full captions. The results which cannot be shown in the table can be expressed by text. Each article contains no more than 8 Tables and Figures. Brief and concise *comments* should go after each Table and Figure).

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(The discussion should not exceed 2 pages, discussing and explaining issues related to the obtained results and comparing them with some similar results from other studies).

5. CONCLUSIONS

(Each conclusion should be numbered in sequence in relation to the study results. It should be kept neat and highlight specific data of the research results).

RECOMMENDATIONS (if any)

Acknowledgement: (if any)

REFERENCES

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2. Some examples of references:

**** Vietnamese:***

1. Bộ Y tế (2007), *Xác định cỡ mẫu trong các nghiên cứu y tế*, Nhà xuất bản Y học Hà Nội, tr. 23- 26.

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**** English:***

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