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MORPHOLOGY CHARACTERIZATION AND REAL-TIME PCR FOR THE DETECTION OF HUMAN *Strongyloides* spp. IN LONG AN PROVINCE IN 2017**Le Duc Vinh¹, Nguyen Kim Thach¹, Huynh Hong Quang²**¹University of Medicine Pham Ngoc Thach,²Institute of Malariology, Parasitology, and Entomology Quy Nhon**Abstract**

Human strongyloidiasis is mostly an asymptomatic infection, sometimes severe or even death in immunocompromised individuals. This study was conducted to identify of Strongyloides genus and species by a Real-time PCR-based method on copro-DNA in stool samples. Total of fresh stool samples were collected and examined by fresh fecal method and modified Sara culture for larva Strongyloides spp. collection. Using real-time PCR method identified the genus Strongyloides targeting on the 28S rRNA sequenses (GenBank U39490) and species identification of Strongyloides stercoralis on the 18S rRNA sequense (GenBank AF279916) and Strongyloides ratti on 28S rRNA sequences (GenBank DQ14570) Among those 50 collected larvae samples, morphological clarification of 100% genus Strongyloides, real-time PCR-based analysis of 98% (49/50) S. stercoralis and 2% (1/50) mixed infection S. stercoralis plus S. ratti. Real-time PCR was a very sensitive technique that can detect very low genomic load up to about 5×10^{-6} S. stercoralis larvae of extracted DNA. The specificity of real-time PCR compared with microscopic observation method was 100%. The real-time PCR method showed that an important tool for pathogenic Strongyloides spp diagnosis, the combination of conventional morphology and molecular diagnosis can be reliable for directly detecting the Strongyloides spp.

Keywords: *S. stercoralis*, *S. ratti*, real-time PCR.**Reviewer:**

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**IGG ANTIBODY DEVELOPMENT IN CHICKENS INFECTED WITH
Toxocara canis, *Toxocara cati*, *Ascaris suum*, AND *Ascaridia galli*
BY ENZYME-LINKED IMMUNOSORBENT ASSAY**

**Nguyen Thi Hoang Yen¹, Haruhiko Maruyama²,
Ayako Yoshida³, Nariaki Nonaka³**

¹Laboratory of Veterinary Parasitology, Faculty of Veterinary Medicine, Vietnam National University of Agriculture, Trau Quy Town, Gia Lam District, Ha Noi city, Vietnam.

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Abstract

The larva migrans syndrome is caused by the migration of roundworms including *Toxocara canis*, *T. cati* and *Ascaris suum* through human body. In some Asian countries, humans have contract of this infection because of ingesting raw or undercooked chicken meat/offals. Chickens are considered as one of the paratenic host of those worms. Besides, chickens are also a definitive host of another common roundworm – *Ascaridia galli*. This study is to evaluate the IgG antibody development in chickens infected with four mentioned roundworms and to seek candidate antigens which can be used to distinguish *A. galli* infection with the other ones. Chickens were inoculated with 2,000 *Toxocara canis*, *T. cati*., and *A. galli* embryonated eggs, 50,000 *A. suum* embryonated eggs experimentally. Blood was collected at 2 week intervals during 12 weeks of infection. ELISA was performed using six antigens made from somatic and excretory/secretory of those worms. In result, the cross-reaction was observed in almost serum samples with different OD405 values. IgG antibody in chickens infected with *Toxocara* spp. developed strongly after 2 WPI and kept constantly until at the end of experiment. The antibody development from *A. suum* infected chickens showed the different pattern. IgG antibody reached a peak at 2 WPI and then declined significantly and increased again with repetition of inoculation. *A. galli* infected chickens developed IgG antibody more slowly and weakly compared to *Toxocara* infected ones. Interestingly, the third stage larva of *A. galli*-derived excretory/secretory antigen reacted exclusively to sera from chickens infected with *A. galli*. In conclusion, *A. galli* excretory/secretory is a promising antigen which could be used to differentiate *A. galli* to other ascarid infection in chickens.

Key words: *Toxocara* spp., *Ascaris suum*, *Ascaridia galli*, chicken, IgG antibody.

Reviewer:

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APPLICATION OF MOLECULAR METHODS IN THE DETECTION OF MINUTE FLUKE SPECIES IN BAC GIANG AND BINH DINH, 2016-2017**Nguyen Thi Thanh Huyen¹, Nguyen Thu Huong², Nguyen Thi Huong Binh², et al.**¹*National Institute for Food Control*²*National Institute of Malagiology Parasitology and Entomology***Abstract**

*A cross sectional study was conducted using realtime PCR and sequencing to detect minute fluke infections in humans, freshwater fish and bodies of water in Hiep Hoa district, Bac Giang province and Phu My district, Binh Dinh province in 2016-2017. The study results confirmed by molecular biology revealed 3 species of minute intestinal fluke in Bac Giang. The worm load was exceptionally high for *H. taichui* compared with other trematode species follow by *H. pumilio* and *C. sinensis* (92.3% vs 61.5% and 34.6%), respectively; and 4 species of minute fluke in Binh Dinh i.e. *H. tai chui*, *H. pumilio*, *O. viverrini* and *C. sinensis* (83.3% vs 75.0%, 29.2% and 8.3%, respectively). There was mixed infections with various species of trematodes (*H. taichui*, *Haplorchis pumilio*, *O. viverrini* and *C. sinensis*). The ADN of minute fluke rate in fish ponds in both provinces with Bac Giang and Binh Dinh was 16.7% and 23.3%, respectively. There was a presence of larvae of *C. sinensis*, *H. taichui*, and *H. pumillio* in seven freshwater fishes with 58,9% (12.5%-95.0%) in Bac Giang and *C. sinensis*, *O. viverrini*, *H. taichui*, and *H. pumillio* in three freshwater fishes with the overall rate was 52,5% (20.0%-95.0%) in Binh Dinh. It is seem *C. sinensis* has been found in humans in central Vietnam and the first time molecular biology has been used to detect the presence of minute fluke DNA in water environment. Thus, there should be further studies of human minute intestinal fluke to confirm the presence of *C. sinensis* in Central Vietnam.*

Key word: minute intestinal fluke, *C. sinensis*, human, DNA, water environment.

Reviewer

Truong Van Hanh PhD.

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**INSECTICIDE RESISTANCE OF DENGUE VECTOR *Aedes aegypti*
IN QUANG NGAI AND PHU YEN PROVINCES, 2012-2016**

Do Van Nguyen, Nguyen Xuan Quang, Huynh Hong Quang et al.

Quy Nhon Institute of Malariology, Parasitology and Entomology

Abstract

*This study was designed to provide information on the susceptibility of *Aedes aegypti* against insecticides in different localities of Quang Ngai and Phu Yen provinces in the period between 2012 and 2016. Samples of *Aedes* larvae and pupae were collected from breeding habitats of various containers including cement cisterns, jars, flower, discarded tyres and tanks by research team from Quy Nhon Institute of Malariology, Parasitology and Entomology. The collected larvae were transferred to the insectary of the Entomology Department and then *Aedes aegypti* adults obtained from F1 generation were fed with 10% glucose and used for insecticide susceptibility tests by the standard WHO test kit method. Susceptibility test was conducted on the adult mosquitoes using Alphacypermethrin 30mg/m², lambdacyhalothrin 0.05%, Deltamethrine 0.05%, permethrin 0.75% and alphacypermethrin 30mg/m² impregnated paper embedded in World Health Organization (WHO) diagnostic test kit following the standard procedure. The final mortality was determined at 24h post exposure time. Results revealed that *Aedes aegypti* in all the study sites were resistant against lambdacyhalothrin, deltamethrin, permethrin and alphacypermethrin. However, *Aedes aegypti* were still susceptible to malathion with 100% mortality rate in all of the sites in both the provinces.*

Reviewer

Assoc. Prof. Le Xuan Hung PhD

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MALARIA VECTORS AND *PLASMODIUM* INFECTION IN MOSQUITOES IN ENDEMIC AREAS OF GIA LAI AND KHANH HOA PROVINCES, VIETNAM**Vu Duc Chinh¹, Vu Viet Hung¹, Nguyen Thi Huong Binh¹, Truong Van Hanh¹, Yoshimasa Maeno², Shusuke Nakazawa³.**¹*National Institute of Malariology, Parasitology and Entomology, Hanoi, Vietnam.*²*Department of Virology and Parasitology, Fujita Health University School of Medicine, Toyoake, Aichi, Japan*³*Department of Protozoology, Institute of Tropical Medicine, Nagasaki University, Nagasaki, Nagasaki, Japan***Abstract**

The study focused on determining the malaria vector species composition and their actual role of malaria transmission, and Plasmodium infection rate in malaria vectors in different settings of four communes. Three cross-sectional surveys on entomology in villages and field sites in 4 communes of Gia Lai and Khanh Hoa provinces were conducted. Malaria parasite infection in mosquitoes was detected by PCR. Results showed that there were 15 Anopheles species found including 2 main malaria vectors An. dirus and An. minimus and some secondary vectors. The distribution of Anopheles species by bio setting, by season was presented. Some behaviors of malaria vectors such indoor/outdoor night time activities were also studied. Four malaria parasite species were detected in An. dirus and An. minimus mosquitoes collected from the fields, namely P. falciparum, P. vivax, P. knowlesi, and P. inui.

Key words: Malaria parasite, mosquito, molecular epidemiology. *Anopheles dirus, Anopheles minimus, Plasmodium vivax, Plasmodium falciparum, Plasmodium knowlesi, Plasmodium inui.*

Reviewer:

Assoc. Prof. Ho Dinh Trung PhD

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ANALYSIS OF PERMETHRIN CONTENT IN INSECTICIDAL PRODUCTS BY GAS CHROMATOGRAPHY-FLAME IONIZATION DETECTOR

Nguyen Thi Hoang Yen, Nguyen Thi Dung, Le Trung Kien
National Institute of Malariology, Parasitology and Entomology

Abstract

The study described the procedure development and validation of the GC-FID method for the determination of permethrin content in pesticides for domestic and medical use based on the guideline of The Plant Protection Department (TCCS 31:2011). The results showed that the linearity of the calibration curve ranged from 0.5 – 3.0mg/mL ($R^2 = 0.998$), the relative standard deviation for precision RSD = 1.0%, relative standard deviation for intermediate precision RSD = 1.1% and good recovery (98.1-101.6%). There were collected 39 samples in Ha Noi markets from different producers. There were 02 samples that published by the manufacturer with a permethrin content of 10.36%, 01 sample with the content of 30%, 34 samples with the content of 50%, 02 samples with the content of 55%. The content of permethrin in the samples (with permethrin 50%) were analysed at NIMPE and reached an average of 49.45%, the results of comparison of the difference rate range from - 4.685% to 2.33% with the content that published by the manufacturer. However, this discrepancy was within the tolerance allowed under the TCCS 31: 2011.

Keywords: *Permethrin, GC-FID, validation.*

Reviewer

Vu Duc Chinh PhD.

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DEVELOPMENT OF AN IMMUNOCHROMATOGRAPHIC STRIP TEST FOR RAPID DETECTION OF FUMONISIN FB1 AND FB2 IN CORN SAMPLES**Tran Viet Tien¹, Do Nhu Binh¹, Nguyen Van Ba¹, Nghiem Xuan Dung²**¹*Vietnam Military Medical University*²*Vietnam Ministry of Police***Abstract**

Fumonisin B1, B2 are the toxins produced by Fusarium species that grow on agricultural commodities in the field or during storage, the most toxic and predominantly in fumonisin B. According to International Agency for Research on Cancer (IARC), FB1 belongs to group 2B, which is possibly related to oesophageal cancer in humans. Fumonisin are typically analyzed by methods such as LC-MS, GCMS, HPLC and immunoassays. Lateral flow immunoassay (LFIA) is based on immunochromatographic, a simplicity, rapidity and high sensitivity in detection of fumonisin. Yolk immunoglobulin (IgY) antibody against FB1 was used to establish a sensitive immunochromatographic (ICG) strip for detecting FB1 in cereal samples. Development of a method for rapid detection FB1 in cereals based on indirect competitive ELISA. The cut off levels of this method was determined as 20 ng/ml of the toxin FB1, FB2 and the limit of detection for FB1 was 4 µg/g (or 4000 µg/kg) in corn sample, respectively. In addition, ICG strip had no cross-reaction with other mycotoxins. Results of FB1 analysis from contaminated samples obtained by the test strip were in a good agreement with those obtained from LC-MS/MS (KAPPA = 0.83).

Key words: fumonisin; yolk immunoglobulin; lateral flow immunoassay.

Reviewer:

Assoc. Prof. Nguyen Thi Huong Binh

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ASSESSMENT OF SOIL-TRANSMITTED HELMINTHIC SURVEILLANCE
SYSTEM IN VIETNAM, 2017

Tran Thanh Duong, Ngo Hoang Long, Nguyen Thu Huong

National Institute of Malariology, Parasitology and Entomology

Abstract

*Soil-transmitted helminth infections caused by *Ascaris lumbricoides*, *Trichuris trichiura* and *Necator americanus/Ancylostoma duodenale* occur in all districts within the country of Vietnam. In recent years, health ministry, international donors, and non-governmental organizations have supported Neglected Tropical Diseases control programs with independent, often parallel structures, with each maintaining its own planning, funding, monitoring, and evaluation strategies. However, control strategies and endemic areas for different NTDs often overlap, integrated programs may provide advantages over parallel programs in terms of cost and efficiency. In Vietnam, the STHs surveillance system is not yet operational at all three levels: commune, district and province. Most are just small activities of each project or deworming program. Staff resources for half-time programs have limited or unprofessional capacity. Funds are scarce and still needy. There is a lack of maintaining the system. The suggestion and solutions to improving the quality of STHs surveillance system in the local areas strengthening local self-help resources and utilizing health insurance and social health work for the program.*

Key word: Soil-transmitted helminth surveillance system

Reviewer:

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**SURVEY ON SUSCEPTIBILITY STATUS TO INSECTICIDES OF DENGUE,
CHIKUNGUNYA AND ZIKA VIRUSES VECTOR IN BINH DINH AND GIA LAI
PROVINCES, VIET NAM (2016-2017)**

Do Van Nguyen, Nguyen Xuan Quang, Huynh Hong Quang *et al.*

Institute of Malariology, Parasitology and Entomology Quy Nhon

Abstract

Aedes aegypti and Aedes albopictus are the two main vectors of important human diseases virus, including dengue, yellow fever, chikungunya and Zika. Three of 5 these disease were identified in Viet Nam including Dengue, chikungunya and Zika virus in which Dengue is the most important vector-borne viral disease with about 70,000-80,000 cases every year. The study was conducted to provide information on the susceptibility status of Aedes aegypti and Aedes albopictus against insecticides in different types of landscapes of Gia Lai and Binh Dinh provinces belonging to Central and West Highland in 2016-2017. Samples of Aedes larvae and pupae were collected from breeding sites of various containers both indoors and outdoors including buckets, jars, flower plots, cement cisterns, discarded tyres and tanks. The field collected larvae were transferred to the insectary and adult mosquitos obtained from F1 generation were fed with 10% glucose and used for insecticide susceptibility tests by the standard WHO test kit method. Susceptibility test was conducted with alphacypermethrin 30mg/m², lambdacyhalothrin 0,05%, deltamethrine 0,05%, permethrin 0,75% alphacypermethrin 30mg/m² and malathion 5% impregnated papers embedded in WHO diagnostic test kit following standard procedure. The final mortality was determined at 24h post exposure time. The results indicated that Aedes aegypti and Aedes albopictus in all the study sites were resistant against lambdacyhalothrin, deltamethrin, permethrin and alphacypermethrin. However, Aedes aegypti and Aedes albopictus were still susceptible to malathion with 100% mortality rate in all of the sites belonging to both provinces.

Key words: *Aedes aegypti, Aedes albopictus, insecticide, resistance.*

Reviewer

Vu Duc Chinh PhD.

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**EFFICACY OF DIHYDROARTEMISININE - PIPERAQUIN
AND CHLOROQUINE IN TREATMENT FOR UNCOMPLICATED *Plasmodium falciparum*
AND *Plasmodium vivax* IN CENTRAL HIGHLAND REGION**

Huynh Hong Quang¹, Nguyen Duc Hong¹, Ly Chanh Ty¹, Nguyen Van Van²

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

²Health Service of Quang Nam

Abstract

The dihydroartemisin plus piperazine combination and chloroquin, which was listed into the essential antimalarial drugs since 2007 in Vietnam, has been used for 10 years until resistance appears in some Southern, Central of Western highland provinces. The study was conducted to evaluate the first-line drugs' efficacy in the treatment of uncomplicated Plasmodium falciparum and Plasmodium vivax patients in multicenters. With the non-randomised controlled study design, minimum sample size, sampling, duration of follow-up, and classification of responses to treatment outcomes (WHO, 2009) in line with WHO's protocol (2009). The results show that DHA-PPQ regimen to P. falciparum malaria, ACPR in 3 sentinel sites were absolute cure rate (100%), except for Gia Lai sentinel with the ACPR after corrected-PCR of 95%, LCF of 1.29% and ETF of 3.71%. PCT and progression was within 48 hours only; except for some cases in Gia Lai was positive asexual parasite in day 3 or ≥ 72 hours. The proportion of positive D₃ of 17% as clinical marker for suspected resistance. The efficacy CQ was still maintains at absolutely high level to P. vivax malaria patients, and the ACPR were 100% in 3 sentinel sites, good tolerance of DHA-PPQ and CQ was found in the treatment regimens. Both DHA-PPQ and CQ regimens were highly efficacious; however, the weakness include LCF (1.29%), ETF (3.71%), and high rate of parasite existence in D₃ day (17%) in DHA-PPQ regimen as an indicator of drug resistance. Therefore, these cases should be more analyses of pharmacokinetics aspect, molecular markers to confirm the resistance more thoroughly.

Key words: Dihydroartemisinin-piperazine, chloroquine, efficacy, resistance

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EFFECTIVENESS OF INTERCEPTOR LONG-LASTING INSECTICIDAL TREATED CONICAL NETS IN MALARIA CONTROL FOR FIELD-HUT SLEEPERS IN KHANH HOA AND GIA LAI PROVINCES**Nguyen Xuan Quang, Ho Dac Thoan, Nguyen Van Chuong *et. al.****Institute of Malariology-Parasitology and Entomology, Quy Nhon***Abstract**

*We evaluated the effectiveness of interceptor long-lasting insecticidal treated conical nets coupled with information, education and communication as malaria control measures for field-hut sleepers in two provinces of Khanh Hoa and Gia Lai during 2016-2017. The results following the intervention indicated that the overall densities of *Anopheles dirus* at the control and treated sites were 1.54 ± 1.38 and 1.46 ± 1.2 mosquitoes/man/night, respectively; of which the latter showed significant reduction of the mosquito densities over the surveys ($p < 0.05$). Prior to intervention, high malaria morbidity was reported at the treated and control sites, typically 6.17% and 6.0%, respectively. Post-intervention surveys reported significant reduction (from 2 to 6 times lower) in morbidity at the treated sites compared with the control sites ($p < 0.05$). For intervention sites alone, malaria morbidities in 2017 decreased significantly comparing the same periods of 2016: 16 times reduced in May 2017 (against May 2016); 6.7 times lower in July 2017, and 10 times decreased in September 2017. Good residual effect of alphacypermethrin was found on the Interceptor nets following 15 months of use, except for some unwanted side effects including eye irritation (6.13%), rash (3.77%), and other insignificant signs of headache, sneezing, and dizziness. High acceptability of interceptor nets was reported in the community, with the net ownership of 87.7%, and the net occupant rate of 89.6%.*

Key words: long-lasting insecticidal treated conical net, field-hut sleeper, malaria control, *Anopheles dirus*, alphacypermethrin.

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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).

Address, email (work address, italic text, left alignment).

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)

.....

3. STUDY RESULTS

(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).

4. DISCUSSIONS

(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

1. General Requirements

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- *Arrangement:* References are classified separately according to language (Vietnamese, English, French, German, Russian ...). Foreign language materials must be kept unchanged without transliteration and translation.

+ Vietnamese references: Alphabetical order by author's first name.

+ Foreign language references: Alphabetical order by author's last name.

+ References without author's name: Alphabetical order by the first word of issuing agency. For example: The National Institute of Malariology, Parasitology and Entomology falls into the letter N.

- The second line onwards of references is indented 1 cm from the first line.

- For materials cited from a specific article in a journal, book, yearbook... then the following order should be adhere: Name of author (year of publication), "Title of the Article", *Title of Book/Journal/Yearbook*, Volume (Number), from page ... to page ...

- For materials cited from books, theses, reports then the following order should be followed: Name of Author/Name of Issuing Agency (year of publication), *Title of Book/Thesis/Report*, Publishing house, from page ... to page .../Total pages.

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.
2. Nguyễn Văn Chương (2000), *Nghiên cứu một số ổ bệnh sán lá gan nhỏ mới được phát hiện ở ven biển miền Trung Việt Nam*, Luận án tiến sỹ y học, Hà Nội.
3. Hồ Văn Hoàng (2006), "Cảnh báo nguy cơ gia tăng sốt rét ở vùng có nguy cơ sốt rét quay trở lại", *Tạp chí Y học thực hành*, 16(1), tr.52-57.

*** English:**

1. Borkakati R.R., Vinmanni S. S. (1997), "Genetics of thermosensitive genic male sterility in Rice", *Euphytica*, 88(1), pp.1-7.
2. Cabada M.M, White A.C. (2012), "New development in epidemiology, diagnosis, and treatment of fascioliasis", *Current Opinion in Infectious Diseases*, 25(5), pp. 518-522.
3. FAO (1971), *Agricultural Commodity Projection (1970–1980)*, Vol. II. Rome.
4. Institute of Economic (1988), *Analysis of Expenditure Pattern of Urban Households in Vietnam*, Department of Economics, Economics Research Report, Hanoi.

EDITORIAL SECRETARY

EDITOR-IN-CHIEF

sắp chữ điện tử và in tại Công ty TNHH in Thanh Bình.

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