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Filariasis: Facts and Control Strategies in Indonesia.

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Abstract

Lymphatic filariasis is a neglected tropical disease, which infection occurs when filarial parasites are transmitted to human through mosquitoes' bite. There are three types of nematodes (Family: Filaroidea) which are the causative agents of this disease, namely Wuchereria bancrofti, Brugia malayu, and Brugia timori. More than 120 million people in the world were infected and in which 83 million of them have elephantiasis. Moreover, there are about 1,3 billion people live in high risk endemic areas. In Indonesia, the infection incidence was increased significantly throughout these recent years, it was reported about 6,998 cases in 2004, and whereas in 2018 there were 12,677 cases. Twenty-eight out of 34 provinces in Indonesia were declared as filariasis endemic areas, which means 236 of city/regency from total of 514 city/regency. WHO has proclaimed that Global Elimination Filariasis Program will be succeed by 2030. One of the activities toward this program is mass drug administration strategy to the risk communities in endemic areas. Moreover, Indonesian government has conducted two strategies, firstly by applying MDA to reduce the incident rate (mf rate <1%), and secondly by managing and monitoring chronic filariasis patients.

However, there were still limited reported studies on the filariasis vector surveillance and control. Based on different geographical and topography, there were about 23 of mosquito species from 5 genera to be known as vector of the filarial worm, they were: Mansonia, Aedes, Culex, Anopheles, and Armigeres. In this study, we are focus in urban filariasis with Culex quinquefasciatus as the main vector of W. bancrofti. This mosquito was active during night at 10 pm to 2 am, more likely active outdoor rather than indoor, and catched mostly during biting rather than resting. Their breeding places were mostly stagnant and polluted water. This study revealed that the genetic polymorphism of 81 mosquitoes from 4 site of endemic location was 945 DNA fragments and showed 6.67% of similarities index. Moreover, study on protein molecules that responsible for defense mechanism of mosquito to filariasis worm detected distinct band at 4.5 – 104.2 kDa with SDS PAGE and about 4.53 – 12.07 kDa by using LCMS. This finding showed the two important mosquito protein as defense to W. banrofti, which are defensin (7 kDa) and transferin (66 kDa). This study also revealed that these proteins could become indicators of the successfulness of MDA application in endemic areas.

Key words: Culex quinquefasciatus, filariasis, genetic polymorphism, Wuchereria

However, well-designed diagnostic studies are needed to estimate the true association between other specific autoantibodies and recurrent miscarriage through epidemiological studies with a larger sample size, including different age groups and populations. Research and development of this concept, has led to other experimental compositions of immunoactive beta-glucan cellulose and polyphenols with antimicrobial activity. Immunoactive beta-glucan cellulose macromolecules with oseltamivir phosphate, the active pharmaceutical ingredient of Tamiflu, significantly increased the biological activity of oseltamivir phosphate. Chemically modified immunoactive beta-glucans may be very promising objects for the development of new pharmaceuticals.

Speaker's Biography:

Dr. Raden Roro Upiek Ngesti Wibawaning Astuti has completed her Post-Graduate Program, Faculty of Medicine University of Indonesia, Jakarta. She has also completed his postdoctoral research studies from faculty of Biology Doctor, University Gadjah Mada. She is the lecturer of majoring in General Biology, Parasitology and Entomology. She has also published more than 10 publications in peer-reviewed journals and has been serving as a reviewer or editorial board member for many journals.

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Protein Phosphatase 2A (PP2A) is a crucial regulator of the cellular signalling pathways, proliferation, cell cycle checkpoints and apoptosis. The PPP2R5C gene encodes PP2A regulatory B56c subunit. Malignanttransformation may occur, if mRNA of PPP2R5C is functionally deregulated, structurally altered, decreased or overexpressed.

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