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Genetic diversity of *Mycobacterium tuberculosis* circulating in Indonesia and its geographical distribution and transmission

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Our recent study demonstrates that a number of microRNAs (miRNAs) are downregulated in human lung cancer and Tuberculosis is still mostly occurring health problem in Indonesia particularly on isolated areas and remote islands. The implementation of National Tuberculosis Programme (NTP) remains low (i.e., other infectious diseases programme) in 29 islands in Flores sea including Liukang Tangaya sub district, Pangkep District, South Celebes Province and also other islands at Kalmas sub district, Indonesia. The purpose of this operational research is to review the exiting TB programme planning and implementation on dispersed remote islands; also to understand the genotyping of *M. tuberculosis* circulation and its distribution and transmission of tuberculosis. Active survey and structured questionnaires were administered to patients suspect TB and providers' in-charge of TB clinics from isolated islands and search the genotyping all *M. tuberculosis* samples. The outcome measure was NTP parameters validated using PCR and compared with clinical finding. All data were analyzed by using EPI-Info version 6.02 and clustering effect by GIS. Our results from this research are: Implementation of TB program on Liukang Tangaya island is not working, not as expected; the TB prevalence rate in Liukang Tangaya island is still higher (endemic); the rate of failed TB treatment patients is still high due to transportation obstacles, economic problems and lack of TB medicine supplies; the sensitivity of the Acid fast staining method is lower than culture and PCR assay, measurement of TB infection rate in the corresponding island populations is impossible to be performed because no measurement on its population serologic prevalence; there is a big gap on TB knowledge between community and Health worker; It is not possible to measure the sensitivity of microscopic assay done by Primary health centre (PUSKESMAS) worker because there is no special health worker for TB in the islands and Distribution of cluster TB suspect in the island can be showed by GIS. It is recommended that a new formulation in strategy and application of TB program should be established.

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MicroRNAs in lung cancer development and drug resistance

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Our recent study demonstrates that a number of microRNAs (miRNAs) are downregulated in human lung cancer and those levels of miRNA suppression correlate with advanced cancer stages and drug resistance. The miRNA suppression is involved in inducing tumor growth and angiogenesis through the induction of their direct target genes. To understand the suppression mechanism, we found that some miRNAs are inhibited by the DNA methylation while some miRNAs are inhibited by higher levels of reactive oxygen species (ROS) production in cancer cells. MiRNA suppression is important for autophagy response and drug resistance.

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