

Biorisk Assessment of Antibiotic-Resistant Pathogenic Bacteria Isolated from Swiftlet Houses in Sarawak

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ABSTRACT

The occurrence of antibiotic resistance in pathogens is a growing concern globally. Development of multiple antibiotic-resistant bacteria has overwhelmed new medical advancement and threatens patients with untreatable infections. The qualitative risk assessment study was carried out to investigate the relative effects of the main determinants of antibiotic-resistant pathogenic bacteria and to estimate the risk of the emergence and spread of antibiotic resistance among humans in the swiftlet's faeces and its indoor air to human health. The methodology applied focused mainly on three main sections namely the hazard identification, exposure assessment, and hazard assessment. Sources of data for bio risk assessment include published literature, data from on-going research projects and data collected from the industry. The results showed that the prevalence of isolating

Gram-positive bacteria were higher in swiftlet houses. Over half of the pathogenic bacterial isolates were multidrug-resistant to a wide range of commonly used antibiotics such as *Bacillus*, *Enterococcus*, *Escherichia coli*, *Staphylococcus*, *Lysinibacillus*, *Paenibacillus* and *Sporosarcina*. 80% of the bacteria isolates showed high MAR index of over 0.2. These emerging pathogenic

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