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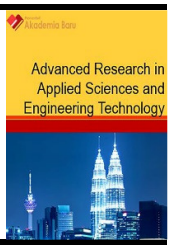

Antimicrobial Activity of Kaempferia Galanga Rhizome against Biofilm of Vibrio Cholerae Outbreak from Limbang Sarawak

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ABSTRACT

Kaempferia galangal rhizome is one of the traditional medicinal plant species in Zingiberaceae family and well known as "cekur" in Borneo. Rapid emergence of multidrug resistance of V. cholerae biofilm has increased the failure of antibiotic treatment in recent years. This research was designed to demonstrate the antimicrobial activity of K. galangal rhizome extract against twenty six (n=26) V. cholera biofilm which were isolated from outbreak in Limbang, Sarawak in 2016. K. galangal rhizome was analyzed by methanol extraction and tested against biofilm of V. cholerae. The susceptibility of V. cholerae towards K. galangal rhizome was evaluated using disk diffusion method which showed a maximum zone of inhibition of 12.0 mm at 1000 mg/mL concentration. As a result, the MBEC50 of V. cholerae was between 125 mg/mL to 250 mg/mL while more than 90% biofilm eradication (MBEC90) was achieved by 500 mg/mL extract concentration. Extract-treated cell showed change in the morphology of V. cholerae by destruction of cell wall. K. galangal rhizome extract acts as a potent antibiofilm agent with dual actions by preventing and eradicating the biofilm of V. cholerae.

1. Introduction

According to a study conducted by the World Health Organization [20], antibiotic therapy has faced difficulties due to misuse and overuse of antimicrobials causing several life threatening infectious diseases. Infections caused by resistant bacteria will affect the treatment, prolonged illness, lead to expensive health-care resources and increased risk of worse clinical outcomes and death. The increasing failure of the chemotherapeutics and antibiotic resistance exhibited by pathogenic microbial infectious agents has led to the screening of antimicrobial agents from local edible plants against microorganisms [15].

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