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ANTIMICROBIAL PROPERTIES AND TOXICITY TEST OF AJWA DATE (*Phoenix dactylifera L.*) SEEDS, STINGLESS BEE HONEY (*Trigona itama*) AND THEIR COMBINATIONS

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AUTHOR'S DECLARATION

I declare that the work in this proposal was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This proposal has not been submitted to any other academic institution on non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Undergraduates, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Skin diseases are one of the major diseases that were recorded to origin from bacteria. Some of these bacteria have mutates into multidrug-resistance bacteria where current treatment or drugs are becoming less effective towards these mutant bacteria. This study focused on identifying the antibacterial properties and the toxicity of stingless bee honey and Ajwa date seeds through disc diffusion assay and brine shrimp lethality assay. The effectiveness of stingless bee honey and Ajwa date seeds alone and followed with their combinations as antibacterial agent against *Staphylococcus aureus* and *Staphylococcus epidermidis* were tested through disc diffusion assay. The toxicity of the samples was tested through cytotoxicity test of brine shrimp lethality assay. Based on the result both samples of stingless bee honey and Ajwa date seeds alone exhibit zone of inhibition with diameter of 9.67 mm for Ajwa date seeds alone against *Staphylococcus aureus* and 10.17 mm for stingless bee honey against *Staphylococcus epidermidis* at concentration of 100 µg/ml. 1:1 combinations of both samples showed an increment against both bacteria as compared alone with diameter of 13.33 mm respectively for both *Staphylococcus aureus* and *Staphylococcus epidermidis*. The composition that contribute to the higher increment of their antibacterial properties are due to the presence of hydrogen peroxide in stingless bee honey and also phenolic content of Ajwa date seeds such as oleic and lauric acid. The toxicity of stingless bee honey and Ajwa date seeds were determined using cytotoxicity test as to determine the toxicity value of both sample that qualify them to have the potency to act as drugs. It is found that both samples of stingless bee honey and Ajwa date seeds are toxic against cancer cell line with LC_{50} value of 254.474 µg/ml and 391.918 µg/ml. For combination, all ratio exhibited the same percent of mortality with value of 40% respectively. As conclusion, this study proved that stingless bee honey and Ajwa date seeds have the antimicrobial properties that can fight against multidrug resistance bacteria and have a high potential in becoming the new source as for combating skin infections bacteria.

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