EVALUATION OF ANTIOXIDANT, ALPHA-GLUCOSIDASE INHIBITORY AND ANTIMICROBIAL ACTIVITIES OF EXTRACTS OF PEEL, SEED, FRUIT FLESH AND ENDOCARP OF *Pometia pinnata*

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

EVALUATION OF ANTIOXIDANT, ALPHA-GLUCOSIDASE INHIBITORY AND ANTIMICROBIAL ACTIVITIES OF EXTRACTS OF PEEL, SEED, FRUIT FLESH AND ENDOCARP FROM *Pometia pinnata*

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The research investigated the potential activities of the peel, seed, fruit flesh and endocarp of *Pometia pinnata* as natural sources for antioxidant, alpha-glucosidase inhibitor and antimicrobial agents. The total phenolic and flavonoid contents of the extracts were also determined and correlated to the activities. Three solvents with different polarity (hexane, ethyl acetate and methanol) were applied in the gradient extraction of the fruit.

The endocarp methanolic extract exhibited the strongest antioxidant activity against DPPH radical compounds (IC_{50} 0.27 µg/ml), even significantly stronger than commercial antioxidant, L-Ascorbic acid (IC_{50} 8.10 µg/ml). The extract was also found to have the highest total phenolic and flavonoid contents. In addition, it revealed the highest alpha-glucosidase inhibitory activity against sucrose and maltose hydrolysis by rat intestinal enzyme, though it was significantly lower than the commercial inhibitor acarbose. Furthermore, the flesh methanolic extract also showed similarly high activity in maltase inhibition. All crude extracts showed bacteriostatic capacity, but the MIC

from broth macrodilution against *Staphylococcus aureus* and *Escherichia coli* were only detected in the endocarp methanolic extract with both MIC 500 µg/ml.

In conclusion, methanol was found to capable of extracting bioactive compounds contributing as antioxidant, AGI and antimicrobial agents. The endocarp methanolic extracts particularly showed the highest potency in all activities, which was discovered in this study for the first time.

Keywords: Antioxidant, Alpha-Glucosidase Inhibitor, Antimicrobial, Phenolic, Flavonoid

DEDICATION

I dedicate this research for my dear parents, my one and only advisor, and for the future of medical treatment.

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