

SELECTIVE NATURAL ANTIOXIDANTS FROM
STAR FRUIT (*AVERRHOA CORAMBOLA L.*),
SOURSOP (*ANNONA MURICATA L.*) AND
PAPAYA (*CARICA PAPAYA L.*) BY-PRODUCTS

LEE PUI TING

B.SC. (HONS.) FOOD SCIENCE AND NUTRITION
SCHOOL OF APPLIED SCIENCES
UNIVERSITY COLLEGE SEDAYA INTERNATIONAL
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ABSTRACT

The disposal of industrial fruit by-products has created serious environmental problems. Although these by-products are believed to contain huge amount of phenolic compounds, previous studies were limited and unsystematic. The objective of this study is to study the effect of the extraction solvent and time on the total phenolic content and antioxidant activity of by-products extracts obtained from selected fruits, star fruit (*Averrhoa Carambola L.*), soursop (*Annona Muricata L.*) and papaya (*Carica Papaya L.*). Extraction was conducted at room temperature with three different concentrations of methanol and two different extraction times: 50%, 70% and 90% methanol solvent at 1 hour and 24 hours extraction time respectively. The extracts were screened for total phenolic content and antioxidant activity using the TPC, DPPH radical scavenging, FRAP and FIC assays. Results showed that solvents with different concentration of methanol and extraction time had significant effects ($p < 0.05$) on total phenolic content and antioxidant activity. Star fruit promace had the highest total phenolic contents (5683.6 ± 95.9 mg GAE/ 100 g of dry weight) and reducing ability (4053.3 ± 63.5 mg GAE /100 g of dry weight) extracted with 50% methanol at 24 hours extraction time. Papaya seed showed the greatest scavenging effect (94.4 %) and reducing ability (420 ± 17.3 mg GAE/ 100 g of dry weight) compared to soursop seed with 50 % methanol at 1 hour extraction time. Significant differences ($p < 0.05$) were observed among the selected fruit by-products for total phenolic content and all antioxidant activities. Star fruit promace was found to significantly contain ($p < 0.05$) highest total phenolic content and antioxidant activity among the selected fruit by-products. The results obtained from this study possess great potential and would open the possibility for the selected fruit by-products to be applied in food, pharmaceutical or cosmetic industry.