ANTIOXIDANT ACTIVITY OF PINEAPPLE (ANANAS COMOSUS)

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ABSTRACT

The radical scavenging activity of pineapple (*A. ananas*) was determined by DPPH assay. The dry pineapple fruit was extracted by maceration in Hexane, Dichloromethane and Methanol for 3 days per each and then filtered. The filtrate was evaporated to dryness. The crude extract was mixed with 22,2-diphenyl-1-picrylhydrazyl (DPPH), absorbance at 515 nm. Gallic acid was used as reference standard. The methanol extract showed the most DPPH assay with the percentage of inhibition at 96.91. Pineapple could be used in the food and pharmaceutical industries.

Keywords: *A. comosus*, pineapple, antioxidant

1. INTRODUTION

Free radicals are highly reactive molecules with one or more unpaired electrons. Free radicals are generated during cellular metabolism, can be ingested or inhaled as environmental pollutants, or can be generated during the metabolism of certain drugs. Free radicals are responsible for the cell damage in the body and contribute to various kinds of health problems, such as heart disease, diabetes, macular degeneration, and cancer. [1-3] Active antioxidants are found in fruits, vegetables, teas, coffee, cereal products, herbs, spices [4-12]

Ananus comosus (L.) (pineapple) is belonging to the family Bromeliaceae is used in folk remedies for digestive disorder and diuretic property. Juice of the leaves consumed for hiccoughs and vermifuge. Juice of ripe fruit regarded also as antiscorbutic, cholagogic, diaphoretic, refrigerant, and useful in jaundice. Young vegetative buds are used for respiratory ailments among Choco children. The enzyme complex of *A. comosus* called bromelain is known for its clinical applications particularly modulation of tumor growth, blood coagulation and anti-inflammatory effect. [13-.14] Pineapple, *Ananas comosus* L. is an important tropical fruit, that is consumed in many parts of the world as fresh fruit, juice, jam, jelly and dried product. It has a high nutritive value and is a rich source of vitamins A, B and C besides several minerals such as calcium, phosphorus and iron. Though there are some reports on the antioxidant activities of pineapple in relation to other fruits. [15]

2. OBJECTIVES

1. To extract of pineapple by organic solvents.
2. To study antioxidant activity of pineapple extract.

3. MATERIALS AND METHODS

Chemicals

2,2-diphenyl-1-(2,4,6-trinitrophenyl) hydrazyl (DPPH), gallic acid (Fluka) Hexane, dichloromethae, methanol and absolute ethanol were purchased from Singma Aldrich

Preparation of pineapple extracts

The Pineapple fruit (Fig. 1) were purchased from Thewet market Bangkok Thailand. Ripe pineapples were cut into pieces and washed with deionised water. The small pieces were heated at 65 °C for 6 hr. The dried fruit (350 g) of pineapple were sequentially extracted at room temperature with hexanes (3 X 700 mL), Dichloromethane (3 X 700 mL), and MeOH (3 X 700 mL) respectively. [11. The extracts were evaporated in

vacuo to obtain three dry extracts, crude hexanes (1.50 g) crude CH_2Cl_2 (21.34 g) crude MeOH (100.15g) respectively. The crude extract was used to explore their antioxidant activity.

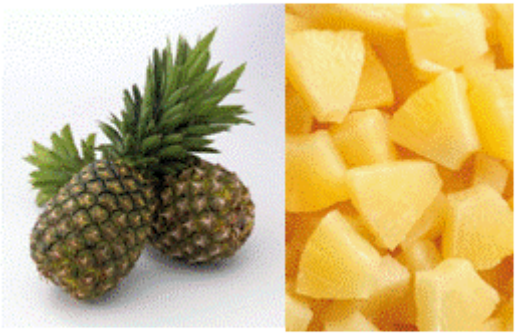

Figure I PINEAPPLE FRUIT

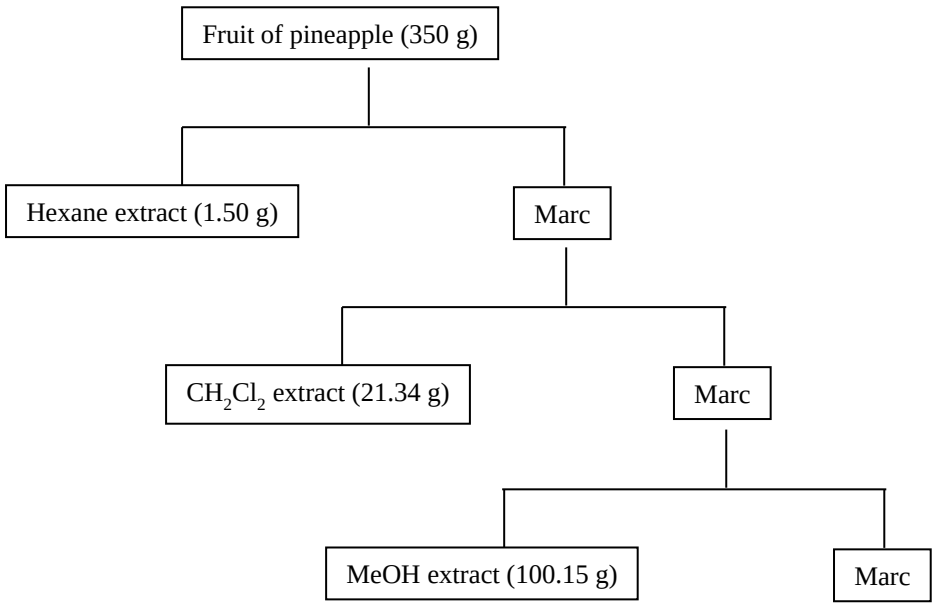

Figure II FLOW CHART OF THE EXTRACTION OF PINEAPPLE

DPPH radical scavenging activity

The DPPH radical scavenging activities of extracts were measured according to the slightly modified method [1]. Each compound (80 µL), was added to 0.3 nM DPPH (400 µL) solution in test tube. All of the compound were tested in final concentrations of 0.1 mg/mL. The reaction mixture (800 µL), was mixed for 1 min and incubated at temperature (37 ºC) for 30 min. then the absorbance was measured at 517 nm with a blank containing DPPH and ethanol. Gallic acid was used as a positive control. The DPPH radical scavenging activity was calculated according to the equation (%) = $(A_{blank} - A_{sample})/A_{blank} \times 100$.

4. RESULTS

In the present work, the yields of hexane, dichloromethane and methanol extracts of pineapples were 0.4%, 5.8% and 28.6%, respectively. The results antioxidant activity of DPPH assay for pineapple extract were showed in Table I

TABLE I Antioxidant activity of pineapple extract.

Extract	% Inhibition
Hexane extract	3.07
Dichloromethane extract	18.14
Methanolic extract	96.91
Gallic acid	97.93

The effects of extracts on DPPH radical scavenging activities were determined based on their hydrogen donating ability. As shown in the Table I, the extract methanol (%inhibition, 96.91) showed strong DPPH radical scavenging activity, which are comparable to that of Gallic acid (%inhibition, 97.93). On the other hand, dichloromethane (%inhibition, 18.14) hexane (%inhibition, 3.07) extract exhibited lower strong DPPH radical scavenging activity.

5. CONCLUSION AND FUTURE WORK

The crude MeOH extract showed highest antioxidant activity. The crude MeOH extract of pineapple fruit showed antioxidant activity with the percentage of inhibition at 96.91. Pineapple could be used in the food and pharmaceutical industries and provide a good source of antioxidant.

6. ACKNOWLEDGEMENT

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