

UNIVERSITI TEKNOLOGI MARA

**QUALITY RETENTION OF MICROWAVE DRIED
PINEAPPLE CORE AND PEELS**

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ABSTRACT

The purpose of this research is to study the effect of microwave power on the drying characteristics of pineapple peels and core. This research is also done to evaluate the total phenolic content and antioxidant activity in fresh and dried pineapple peels and core. The pineapple peels and core were dried under different microwave power (180 W, 450 W and 850 W). After that, both peels and core of fresh and dried were extracted at 50 °C for 30 minutes using ethanol solution. The extract samples were used for analysis of total phenolic content and antioxidant activity (DPPH Assay). The results showed higher microwave power led to shorter drying time, thus resulting to high drying rate. Drying kinetic for microwave showed three drying periods, i.e. i) heating period, ii) constant drying rate period and iii) falling rate period. On the other hand, dried peels and core resulted in high total phenolic content compared to fresh ones. Dried peels and core exhibited 19.8 mg GAE/ g dry sample and 21.3 mg GAE/ g dry sample, respectively at microwave power of 180 W and 850 W. Furthermore, dried peels and core were also found to be potentially scavenged radical molecules. Dried core at 180 W revealed to be a good extraction to scavenge free radical as it was achieved around 74 % of DPPH inhibition. From forgoing results, microwave drying can be a good process to be practiced in food preservation as it helps improved the quality of product.

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CHAPTER 1

INTRODUCTION

This chapter described the whole project of research. First, it describes the area of the study. Then, a couple of problems are identified from the existing research. From the problem statement, the research project will focused on the scope of the project. In addition, the objectives of the research project also will be determined.

1.1 RESEARCH BACKGROUND

Malaysia is a country with a vibrant tropical climate where year – long heat and abundant rainfall permit a wide variety of delicious fruits to flourish. Some of the fruits such as durian, mangosteen, papaya, rambutan and the host of fruits were introduced to the country many years ago. Pineapple or *Ananas comosus* is one of the familiar fruits among citizens in Malaysia and the world especially in the country of Costa Rica, Brazil, Philippine, Thailand etc. as they are the largest countries of producing the pineapple crops. In Malaysia, this kind of fruit is well-liked in Pontian, Johor and commonly used in the food industry as food product. Pineapple has been widely consumed as jam, juice, canned fruits, dried fruits and fresh fruit.

Pineapple is an excellent source of vitamin A, B and C. It is also contain minerals like calcium, manganese, iron and phosphorus. People normally consume a pineapple juice because of high nutritional content. Apart from that, traditionally, pineapple juice has been practice to cure sore throats and seasickness. The presence of compound such as ascorbic acid, polyphenols, caffeic acid, flavonoids etc. contribute to the antioxidant activity in the fruit extract.

The processing of pineapple juice will produce pineapple waste. The waste of pineapple includes peel, core, crown, bottom and trimming. These wastes are known as by-product of pineapple which commences about 70% of total pineapple weight and 50% of them are solely from pineapples cores and outer peel (Rashad, Mahmoud, Ali, Nooman & Al-Kashef, 2015). Thus, the utilization of pineapple waste into value added product may