UNIVERSITI TEKNOLOGI MARA

THE EFFECT OF INLET TEMPERATURE TOWARDS SPRAY DRYING OF PINEAPPLE FLESH, PULP AND PEELS

MUHAMAD FARIS BIN NOOR AZMAN

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Faculty of Chemical Engineering

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ABSTRACT

This research addresses to study the effect of 130^{o}C, 140^{o}C and 150^{o}C of inlet temperature towards pineapple flesh, pulp and peels powder. The carrier agents that been used was maltodextrin with concentration of 15%, 20% and 25%. The powder was obtained by using spray drying with speed pump 3 was keep constant. The inlet temperature give major impact on the product yield and its flow rate. As inlet temperature increase, the product yield and the flow rate was also increase. After that, the moisture content, titratable acidity and total soluble solids was analysed. The moisture content seemed to reduce as the inlet temperature increase. The concentration of maltodextrin found to give effect to the acidity content in the powder. The highest titratable acidity % was found in 15% maltodextrin of pineapple powder. The total soluble solids content in powder found to decrease as the inlet temperature was increased.

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CHAPTER 1

INTRODUCTION

1.1. RESEARCH BACKGROUND

The pineapple (Ananas comosus) is a tropical plant with consumable fruit consisting of coalesced berries, also called pineapples, and the most accessible plant in the Bromeliaceae family. Pineapples can be cultivated from a cutting crown of fruit, perhaps in 20-24 months flowering and fruiting the following six months.

Pineapple is one of the tropical fruit that can be found in Malaysia. To prevent from blacken or too ripe, the pineapple juice is transform to become a powder by using drying technique. In powder, the moisture content is lower than in fresh pineapple. While, the size is easy to stored, packaging and transport with a longer shelf life.

One of the drying technique is spray drying. Spray drying is a technique to separate the solute and change the solvent into vapor. The liquid is channel into a hot vapor stream to be vaporized. Usually air is being used as the hot media to dry the liquid. But if the liquid is flammable, the air was replace with nitrogen gas. Spray drying was chosen in this study because of the time to produce powder was shorter compare to other drying method such as freeze drying, vacuum chamber dryer and Vibro-fluidized bed.

In spite of that, because of high sugar content in pineapple juice, the powder produce from spray drying is stickiness. Moreover, the powder also have high hygroscopicity that can contribute to thermoplasticity at high temperature and humidity.