Effect of temperature to the properties of sago starch

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Abstract. Recently, the importance of sago starch has increased, as it has become one of the main economically important agricultural crops to the most Southeast Asia countries. In the present work, an analysis on drying process of sago starch (Metroxylon sagu Rottb.) underwent various temperature has been made by using four empirical equations. The main goal of this analysis is to suggest the most accurate equation, in order to model and simulate the mechanical drying of sago starch. The experimental investigations were carried out in a gravity convection lab oven; and ±50g of sago starch (sample heights of 1 cm) was dried through four different temperatures, which were 50, 60, 70 and 80ºC. The effect of drying temperature on the drying kinetics, as well as various qualities attributes of sago starch, such as microstructure, colour and functional properties were investigated. The results suggested that drying temperature has significant effect on sago starch drying kinetic; therefore, drying temperature would be the basis to select drying condition. Meanwhile, it was found that the various drying temperature ranging from 50 to 80ºC affected the product quality especially in term of colour.

1. Introduction

Sago starch is the product of sago palm (Metroxylon sagu) or commonly called as “rumbia”. It is a tropical plant with huge trunk that may reach height up to 25 m and a diameter of 40cm; with pinnate-leaves up to 9 m long. It can tolerate wet-swampy lands such as peat soil. Sago palm reaches its maturity after 9 to 12 years of planting [5]. In term of productivity, sago palm produces the highest among the starchy crops in the world which is 250kg per palm; therefore it is also known as the ‘starch crop of the 21st century’ by many scientists [4]. Sago starch main content is carbohydrate which is higher than rice and wheat flour. For this reason, it has become the staple food since ancient times in