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Abstract

Durian seed has receive huge attention from researcher in tropical country since the utilization of this seed is still questionable. However, the basic process is needed to provide beneficial information to all users for proper process in food industry This study was aimed at describing the basic parameters in drying: lightness and moisture content during drying. The durian seed was dried using drying oven at 50 and 55°C and the lightness was measured using digital colour meter for Macintosh, in the other hand, the moisture content was analysed through calculation on the differences of weight prior to drying and after drying. All obtained data were analysed statistically using T-test. The results showed that the remarkable decrease in the lightness, from 54.07±1.79 to 49.09±4.10 and in moisture content of durian seed from 48.82±1.69 to 39.30±3.60 after the elevation on drying temperature was applied. This research showed that the elevation on drying temperature provide the significant differences on the lightness and moisture, therefore the temperature should be set properly to compose the maximum quality for final product of durian seed.

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Introduction

Durian has been known as tropical fruits and the people commonly consumes this fruit within its harvest season: December to March. The remaining problem was then appear since the seed and skin is still under-utilized. Brown (1997) stated that the seed of durian contains 43.6% of carbohydrate and 2.6% of protein. Based on this potent use for food resources, this research was objected to analyse the seed of durian using dry treatment in oven.

The dry process to obtain the dry of seed has been studied well using high temperature in order to produce rapid production of seed. However the resulted seed powder was dark, therefore, the addition of Na₂S₂O₃ was applied to maintain the white colour of powder (Simanjuntak et al., 2014). To avoid the chemicals addition, the dry process should be conducted in low temperature, therefore this research used temperature at 50 and 55°C. The lightness and moisture content in the seed after dry process were analysed. This research might provide benefit to food industries as basic information to apply seed of durian into their process.

Material and Methods

This research was conducted from January to March 2017 and fresh durian's seed from traditional market nearby research place was used.

Preparation for dry process

The seed of durian was cut into 1-2 mm of thickness, then put into tray. The oven was set to 50 and 55°C, RH 60% for 6 hours. After the target time was achieved, the dried durian's seed was powdered using ball miller for 10 minutes. The obtained flour was analyse for lightness and moisture content.

Methods for Analysis

The flour of seed was placed under the iSight camera that was placed in the isolated room using the 20 lumen of light. The lightness of powder was analysed using digital color meter software in Macintosh computer. The moisture content was analysed using AOAC procedure (AOAC, 1995)

Data analysis

Data were obtained through 9 replications and the

1 represented data were the average \pm standard deviation. The t-test with significance level α at 0.05 was applied to measure the differences among treatments.

Result and discussion

Lightness change after drying process

L^* value was analysed to perform the lightness value after drying process. The higher value of L^* indicates the more bright of sample. This value was known to describe the food quality changes after treatment (Suyatma, 2009). Table 1 shows the L^* value of the dry seed powder after treatment using heat at 50 and 55°C. The treatment of 50 and 55°C of drying resulted in the L^* value of 54.07 ± 1.79 and 49.09 ± 4.10 , respectively. This result indicated the remarkable reduction ($p < 0.05$) on L^* as an increase in temperature. The lightness was the key to decide the temperature of drying. The higher in applied temperature resulted in the higher in L^* value.

Wang et al., 2013 found the L^* value of about 64-72 when the temperature at 90°C was applied in cassava flour. Even though compared sample were differed, the initial lightness of both cassava and durian's seed were comparable. Since the bright was preferred by food industry or consumer preferences, so the 50°C of temperature was the best in lightness to produce the seed.

Table 1. Lightness value and moisture content of dried durian's seed flour after drying process at 50 and 55°C, RH 60% for 6 hours

Parameters	Drying temperatures	
	50°C	55°C
Lightness value	54.07 ± 1.79^a	49.09 ± 4.10^b
Moisture content (%)	48.82 ± 1.69^a	39.77 ± 3.60^b

Data were obtained from 9 determination \pm standard deviation. Superscript within the same column containing different lowercase letters shows significantly different ($p < 0.05$).

Moisture content of the seed

As can be seen on Table 1, the increase in the temperature from 50 to 55°C remarkably decreased ($p < 0.05$) moisture content from 48.82 ± 1.69 to $39.77 \pm 3.60\%$. García-Segovia et al., 2016 stated that the drying process effected to the decrease in the moisture content of cassava into 13% after drying at 70°C under vacuum condition. The lower moisture content in this research than previous result might be explained by the combination in higher temperature and vacuum condition.

Chips is the one of favourite food product that are developed from the drying process of food. However the minimum of final product should be equal to or less than 33.9% of moisture content (Yuksel and Kayacier, 2016). Thus, since this research showed the lower moisture content than previous result, much longer time of drying process is advised.

Conclusion

The increase in the temperature of drying from 50 to 55°C remarkably decreased the lightness value and the moisture content of durian seed flour. The results might provide the consideration to utilize durian's seed as food resources to produce various food products.

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