

Piyaporn Kamparnon 2014: Product Development of Encapsulation Palm Sugar Powder.
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Product Development, Department of Product Development. Thesis Advisor:
Associate Professor Sombat Khotavivatana, M.Sc. 96 pages.

The objectives of this research were 1) studied the suitable condition to produce palm sugar powder by spray dryer, 2) studied optimal type and concentration of wall material for encapsulating palm sugar powder. The suitable condition of palm sugar powder production was investigated with variables inlet air temperature (130, 150 and 170 °C) and Moltodextrin DE10 concentration (10, 15 and 20%). The results showed that Moltodextrin DE10 at 20% concentration and inlet air temperature of 150 °C gave palm sugar powder with quality values of; lightness (L*), greenness (-a*), and blueness (-b*) of 73.80, -2.34, and -2.66, respectively, a_w of 2.72, 0.29% moisture content, solubility of 1.48 minutes, bulk density of 2.56 ml/g., 24.46% yield and liking score of appearance, overall flavor, sweetness and overall liking of 6.2 5.9 5.8 and 5.6 points respectively and sweetness was just about right. Then type and concentration of wall material suitable to encapsulate palm sugar powder was studied, the variables including types of wall material (Moltodextrin DE18 and Gum Arabic) and concentration of wall material (0.25, 0.50 and 0.75% of the weight of Moltodextrin DE10). The results showed that encapsulation with Moltodextrin DE18 at 0.50% concentration gave palm sugar powder with color values L*,a*,b* of 68.86, -1.82, and -2.39, respectively, a_w of 0.23, 2.23% moisture content, solubility of 2.07 minutes, bulk density of 2.56 ml/g., 40.14% yield, and liking score of appearance, overall flavor, sweetness and overall liking were 6.8 6.0 6.2 and 6.3, respectively, and sweetness was just about right. The qualities of the developed palm sugar powder were bulk density of 3.32 ml/g., solubility of 2.25 minutes, a_w of 0.23, 2.23% moisture content, total microbial count was less than 1×10^3 CFU/g, yeast and mold was less than 10 CFU/g, pH of 6.02, lightness of 70.50, greenness of -2.16 and blueness of -0.35. Later, the ratio of palm sugar powder:water was studied. The ratio of palm sugar powder:water of 5:1 was the ratio that consume liked the most. Consumer acceptance test showed that consumer 68% accepted plam sugar powder, and 83% of them were interested in buying palm sugar powder at 10 baht per 1 pack (20 g).

Student's signature

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