Research Title: Development of appropriate formulations of Straw mushroom Crispy enriched with Lycopene and Fiber from Ivy gourd fruit

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Abstract

This research aims to study the effect of different drying methods that affect the quality of ivy gourd fruit powder was tray drying, drum drying, freeze drying and control. The results found that the ivy gourd fruit dried by drum dryer was highest lycopene content. Fiber content and crude fat content of ivy gourd fruit powder dried by three drying methods was not significantly different ($p>0.05$) with control. The a* color of the ivy gourd fruit powder dried by freeze drying was not significantly different ($p>0.05$) with control but was significantly different ($p\leq0.05$) with tray drying and drum drying.

This research emphasized that the ratio by w/w of cassava flour : straw mushroom and ivy gourd fruit powder in making a straw mushroom crispy enriched with lycopene and fiber from ivy gourd fruit powder at 71:23:6, 70:25:5, 70:23:7, 73:20:7, 72:20:8, 75:20:5, 70:25:5, 73:22:5, 75:20:5, 70:20:10, 71:20:9 and 70:20:10 on the physiochemical properties and sensory evaluation. The results found that the lycopene content, fiber content and protein content

increased whereas crude fat content decreased at higher concentrations of ivy gourd fruit powder and lower concentrations of cassava flour and straw mushroom. The protein content, ash content, carbohydrate content, total acidity, a_w, L* a* b* color and fractuability of the samples were 0.31±0.02 – 0.75±0.06 mg/g, 1.51±0.15-3.75±0.13%, 2.29±0.15-2.94±0.10%, 0.15±0.14-0.59±0.11%, 2.36±0.01-2.83±0.01%, 0.54±0.01-0.69±0.07%, 0.60±0.01-0.69±0.01, 45.84±0.28-49.73±0.38, 14.10±0.31-16.25±0.27, 14.95±0.35-19.37±0.30 and 564.12±0.47-1099.93±0.43 g.force, respectively. It was found that total plate count and yeast and mold were $3.30x10^2$±0.24-$5.20x10^2$ ±0.16 cfu/g and 1.00 x 10±0.24-4.95x10±0.18 cfu/g, respectively for the straw mushroom crispy enriched with lycopene and fiber from ivy gourd fruit. *E. coli*, *Staphylococcus aureus* and *Salmonell*a sp. were not found of all samples. However total aerobic plate count and yeast and mold were in the permission level of count for straw mushroom crispy enriched with lycopene and fiber from ivy gourd fruit. From mixture design experiment, it was found that the main ingredients of straw mushroom crispy enriched with lycopene and fiber from ivy gourd fruit were 71.7% cassava flour, 20.0% straw mushroom and 8.3% ivy gourd fruit powder. The overall acceptability attribute liking scores, lycopene content and fiber content of straw mushroom crispy werer 6.75, 0.44±0.06 mg/g and 3.33±0.01%, respectively.

Key words: Crispy, Straw mushroom, Lycopene, Fiber, Ivy gourd