Chantarakan Songdach 2012: Development of Healthy Snack Product from Mushrooms. Master of Science (Home Economics), Major Field: Home Economics, Department of Home Economics. Thesis Advisor: Ms. Siriporn Riebroy, Ph.D. 148 pages.

Chemical composition, color, textural properties and acceptability of the healthy snack product from different rations of shiitake mushroom (*Lentinus edodes,* LM) straw mushroom (*Volvariella volvacea*, VM) and oyster mushroom (*Pleurotus sajor-caju*, PM) were studied. The results showed that the protein and crude fiber content increased with the increase of PM ratios, whereas carbohydrate content decreased ($p<0.05$). While the VM and PM ratios increased, L*, a* and b* values increased ($p<0.05$). Mushroom sheet product from LM: VM: PM at the ratio of 50:25:25 (CMS-4) showed a greatest acceptability ($p<0.05$). Dried mushroom replacement affecting on chemical, physical and sensorial properties of CMS-4 was investigated. Different dried mushrooms had a slightly different rehydration ratios and a lower moisture content compared with fresh mushroom ($p<0.05$). As dried mushroom replacement increased, resulting in increasing in crude fiber and decreasing of moisture content ($p<0.05$). Based on the results, an increase in hardness and crispness of samples were obtained. Regarding acceptability test, sample with a ratio of fresh to dried mushroom at 75:25 (CMD-2) had the highest liking score for all attributes ($p<0.05$) and no difference between CMD-2 and CMS-4 in acceptability was noticeable. All macro- and micronutrients of both samples were similar, especially protein and carbohydrate content. Moreover, the CMD-2 had lower calorie and essential amino acids compared with CMS-4. Changes in chemical, microbiological and physical properties of both CMS-4 and CMD-2 packed in aluminum foil bag and flushed with nitrogen (N_2) or atmospheric air (control) during 14 –week storage at ambient temperature were studied. The moisture content, water activity (a_w) as well as Thiobarbituric acid reactive substances were higher than that of samples packed under N_2. No change in total viable count in both samples throughout the storage period ($p>0.05$), whereas yeast and mold count increased during storage time and the rate of increase was more pronounced in the control ($p<0.05$). In addition, the control showed greater decreases in hardness and crispness than did packed with N_2 ($p<0.05$). Additionally, lower acceptabilities in all attributes was found in the control ($p<0.05$). The results revealed that increases in lipid oxidation and water activity occurred in samples affecting on rancid flavor and texture, particularly crispness. It was concluded that a healthy snack could be produced from mushroom (both fresh and dried forms) and the N_2 flushing packaging could be used to extend the shelf-life of crispy mushroom sheet.

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