Pruk Prasertkul 2011: Effect of Natural Colorants on Fish Ball Quality. Master of Science (Fishery Products), Major Field: Fishery Products, Department of Fishery Products. Thesis Advisor: Assistant Professor Jiraporn Runglerdkriangkrai, Ph.D. 99 pages.

The colorant extraction conditions and the kinds of natural colorants which are suitable for SA grade surimi gel were studied. The four groups of natural colorant namely: green (Chinese kale, pandanus leaf, dried sea lettuce and tiger herbal), yellow or orange (turmeric, pumpkin, dried safflower and carrot), red (beet root, dried roselle and angkak) and blue (butterfly pea flower and purple cabbage) were extracted using the cold water extraction (CE), extracting with 95 % ethanol (EE) for angkak and boiled water extraction (BE) for dried samples. When colorants were mixed with surimi, it was found that the colorants, which were not bleeding and maintained their color after heating, were Chinese kale (CE), pumpkin (CE) and carrot (CE) and angkak pigments extracted by EE. Tray drying at 60 ^{o}C of all colorants showed better fixed color identity and solubility than those dried at 80 ^{o}C.

To study the appropriated amount of colorant powders, surimi was mixed with each colorant powders prepared from Chinese kale, pumpkin and carrot at 0.5, 1 and 2% (w/w) and angkak at 0.3, 0.5 and 0.7% (w/w). Increasing amount of all colorants decreased lightness (L*) of treated gel while the greenness (-a*) and the yellowness (b*) of gel with Chinese kale powder; the b* of gel with pumpkin powder and both redness (a*) and b* of gel with carrot and angkak increased. Gel strengths of all samples with colorants were lower than that of the control. Increasing the amount of the colorants apparently lowered the gel strength especially that with 2% Chinese kale and carrot powder. The pHs of all treated-gel were in the range of 6.72-6.99. Water holding capacities of gels were 99.56-99.84%. From the sensory evaluation, using 1 % extracted colorant powder from Chinese kale, pumpkin and carrot and 0.3 % angkak in surimi gel were the most appropriate with the overall preference at the level of moderate liking. The acceptance survey from 162 consumers on fish ball prepared from catfish (*Clarias gariepinus*) mixed with each colorants, showed the higher overall liking score of fish ball with Chinese kale and pumpkin than the others ($p>0.05$). The ranking test showed that the preference in fish ball with Chinese kale, pumpkin and angkak colorant were not different ($p>0.05$), and were higher than the fish balls with carrot colorant ($p<0.05$). The fish balls with Chinese kale and pumpkin were highly accepted at 80 and 85%, respectively. Changing in fish balls quality with Chinese kale and pumpkin colorant during storage for 12 days showed that both samples kept in ice without light exposure had more unique color and hedonic scores of odor, texture, flavour and overall liking and had less total bacterial counts than the samples kept at 4 ^{o}C with light exposure ($p <0.05$).

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