

Jukkarin Treeinthong 2011: Use of Seaweed Extracts to Improve Quality of Fish Ball. Master of Science (Fishery Products), Major Field: Fishery Products, Department of Fishery Products. Thesis Advisor: Assistant Professor Jiraporn Runglerdkriangkrai, Ph.D. 141 pages.

Effects of extraction conditions on the quality of hydrocolloids extracted from 3 species of seaweed namely; *Gracilaria fisheri*, *Solieria robusta* and *Porphyra* sp. were studied including the incubation of seaweed in 5% sodium hydroxide at 80 °C for 2 h and two heating conditions i.e. incubating in water bath at 80 °C for 2 h (WB-80) and autoclaving at 121 °C for 30 min (AC-121). It was found that incubating in alkaline solution decreased the yield and viscosity and increased the gel strength (GS) and whiteness (L*) of agar powder ($p < 0.05$) extracted from *G. fisheri*, while, the extraction at AC-121 condition increased agar yield. For alkali treated *Solieria robusta*, heating at AC-121 lowered the yield of carrageenan than that of non - alkali treated sample and both heating conditions had no effect on GS ($p > 0.05$) but had decreased emulsion activity (EA) and emulsion activity index (ESI). In case of *Porphyra* sp., alkali treated sample showed porphyran gel formation and extraction at AC-121 increased the GS, EA and ESI of porphyran ($p < 0.05$).

Addition of 1.0 – 2.0 % (w/w) agar powder extracted from alkali treated *G. fisheri* in surimi presented the grainy clear agar gel distributed in the protein gel that resulted in the sensory unacceptability. Addition of 2% carrageenan increased the breaking force (BF), GS, hardness, cohesiveness and water holding capacity of lizard fish surimi gel more than adding at 0.5 % and 1.0 % ($p < 0.05$). However, panelists had rejected fish ball making from this grade surimi due to the mushy texture. Addition of 0.5 % carrageenan caused grade A surimi gel showed the highest BF, GS and preference score of texture ($p < 0.05$), on the other hand, addition of carrageenan to grade SA surimi gel decreased the GS and breaking distance when compared with the control ($p < 0.05$).

Addition of 0.5 % carrageenan of fish weight into fish ball made of small mud carp (*Cirrhinia microlopis*) and Nile tilapia had no significant difference from control ($p > 0.05$) but had higher the sensory preference scores of texture than control ($p < 0.05$).

Student's signature

Thesis Advisor's signature