

CHAPTER 4

CONCLUSIONS

1. Mechanical properties and color of the surimi film from tropical fish were affected by pHs and protein content. Acidic condition rendered the films with the greater EAB with the higher yellowness, while alkaline condition favored the protein degradation. pH also affected the hydrolysis of sugar, which accordingly influenced the color formation in the film via Maillard reaction. Bigeye snapper surimi films with 2% protein content at the acidic condition had the highest mechanical property and lowest WVP, compared with other samples.

2. Incorporation of lipids directly affected the properties of surimi protein/lipid composite film by decreasing water vapor permeability and water solubility, owing to the hydrophobic nature of lipids. Compared to surimi protein films modified by solid lipids, those incorporated with liquid lipid generally exhibited better mechanical properties, due to the regularity of dispersed lipid phase and structure integrity of the films. Hydrophilic plasticizer was still required in concert with lipids to maintain the plasticity or extensibility of the surimi protein films.

3. The chemical modification was efficient in lowering WVP, EAB, film solubility and protein solubility but increased TS of surimi protein film. Films incorporated with formaldehyde were slightly lighter and less yellowish brown than those incorporated with glutaraldehyde and glyoxal. Films turned to be more opaque with increasing aldehyde amount. The addition of MTGase could improve the elasticity of surimi film, but had no effects on WVP and TS of surimi films.

4. Bigeye snapper surimi films displayed high stability regardless of storage time, temperature and RH studied. Surimi films incorporated with oil or with oil in combination with formaldehyde became more darker with the decreases in L^{*}-, a^{*}-values and transparency but the increases in b^{*}-value when the storage time increased. When the surimi films modified by oil and formaldehyde were used for shelf-life extension of dried sardine powder, TBARS, moisture content, a^{*}- and b^{*}-values of all samples increased continuously with increasing storage time but the increasing rate was more retarded in comparison with those of samples stored using film incorporated with oil and polyethylene, respectively.