

Chapter 4

Conclusion

1. Type and concentration of phosphate compounds had the influence on gel properties of surimi from bigeye snapper and threadfin bream differently. The increased phosphate concentration generally showed the detrimental effect on gel formation, possibly by chelating calcium ion required for endogenous TGase activity. PP exhibited the superior gel strengthening effect to others, whereas HMP showed the adverse effect on surimi gelation.
2. The use of PP in combination with CaCl_2 at appropriate levels could improve gel forming ability of surimi effectively. The gel enhancing effect of CaCl_2 markedly increased in the presence of 0.025% PP. Additionally, increasing setting time at 40°C was able to increase the gel strength of surimi effectively.
3. The use of PP in combination with MTGase at the optimal condition could improve gel forming ability of surimi effectively, especially with increasing setting time at 40°C .
4. PP caused the dissociation of actomyosin from bigeye snapper and threadfin bream NAM as indicated by the decrease in Mg^{2+} -ATPase. However, TPP and HMP showed no effect on dissociation.
5. The inactivation rate constant or K_D value of NAM of threadfin bream was higher than that of bigeye snapper NAM at all conditions, suggesting that muscle proteins of threadfin bream were more susceptible to thermal denaturation than those of bigeye snapper under the same condition used. The K_D was generally greater in the presence of pyrophosphate.

6. TGase activities in muscle of bigeye snapper and threadfin bream were reduced in the presence of phosphates, especially at the higher concentration via Ca^{2+} ion chelation. Addition of CaCl_2 could increase TGase activity in the presence of pyrophosphate slightly.

Suggestion

Since phosphate compounds are generally added to commercial surimi prior to freezing, characteristics and properties of surimi added with phosphate should be monitored during extended frozen storage to elucidate its role in protein changes as well as gelation of surimi proteins.

Additionally, phosphate compounds are used to improve the quality of surimi products. Therefore, types and level of phosphate compounds can affect the properties and shelf-life of surimi products. So, the effect of phosphate compounds on properties of interested products such as emulsion-type products and their shelf-life should be further studied.