Chapter 4

CONCLUSION

1. MRPs prepared by heating 2% PPP with 2% galactose showed the highest antioxidant activity. Antioxidative activity was coincidental with the increase in browning and absorbance at 294 nm with the concomitant decrease in free amino groups.
2. MRPs prepared by heating PPP-glucose mixture with higher initial pH showed the higher antioxidant activity. However, no differences in antioxidative activity and reducing power of MRPs with initial pH of 10, 11 and 12 were found.
3. MRPs prepared by heating PPP-acid hydrolysate-glucose mixture with initial pH 12 exhibited the greatest antioxidant activity when the hydrolysate of 20% DH was used. No difference in antioxidative activity and reducing power of MRPs derived from hydrolysate with DH of 20, 40 and 60 was noted.
4. Stepwise fractionations of MRPs resulted in the lowered antioxidative activity and reducing power. Nevertheless, residual fraction showed the highest metal chelating activity. All MRP fractions showed the increase in radical scavenging activity and reducing power in a concentration dependent manner.
5. Decolorization either by activated carbon or Sep-Pak Cartridge C18 could reduce the color and browning of MRPs. The Sep-Pak Cartridge C18 treatment was more effective in reducing the color of MRPs than activated carbon, particularly with increasing repetition. However, antioxidative activity and reducing power of those

decolorized MRPs except MRPs decolorized by Sep-Pak Cartridge C18 for 1 time decreased.

6. Antioxidative activity of MRPs and decolorized MRPs had the increased reducing power, DPPH radical scavenging activity and metal chelating activity in a concentration dependent manner. MRPs and decolorized MRPs exhibited the hydrogen peroxide scavenging activity. However, the prooxidant effect were observed in hydroxyl radical scavenging assay.
7. MRPs and decolorized MRPs showed the prooxidant activity in lecithin-liposome system. At low concentration (100 and 200 ppm), MRPs showed the prooxidative effect in β-carotene-linoleic acid system, however antioxidative activity was found when high concentration was used.
8. The antioxidative activity of MRPs and decolorized MRP powders was stable during storage at 4°C and 25°C up to 6 weeks. Then slight decrease was found after 8 weeks of storage.
9. MRPs and decolorized MRPs could retard the lipid oxidation in sardine mince during iced storage. Moreover, the lipid oxidation in sardine emulsion sausage was suppressed by MRPs during storage at 4^{o}C.