# CHAPTER V
# SUMMARY

It has been demonstrated that lipid oxidation of tilapia differed among body parts. During prolonged ice storage, the gill of tilapia was the most prone to lipid oxidation. Free fatty acid composition decreased as the storage time was extended. The activity of LOX was relatively high during storage, suggesting that it could be an important enzyme to catalyzing lipid oxidation during storage. The majority of volatile compounds changed during ice storage. According to the PCA, 2-butanone and nonanal in muscle, 6-methyl-2-haptanone and 2-nonanal in gill, and 1-haptanol, and 1-nonanol in skin showed potential to be used as freshness indicators. In addition, hexanal was a potential marker for measuring degree of lipid. To preserve the quality of tilapia, gills should be removed prior to ice storage and filleting.

Goatfish, lizardfish, and threadfin bream are major raw materials for tropical surimi production. They high concentration of polyunsaturated fatty acid (PUFA) susceptible to lipid oxidation. Docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) are the two most abundant PUFA in all tropical fish studied, with the highest concentrations observed in gill. Goatfish gill showed the highest PUFA. Lizardfish gill exhibited the highest LOX activity. LOX activity of lizardfish surimi processing decreased from 157.19 U/g in raw material to 57.85 U/g in surimi. Lizardfish surimi contained a high amount of DHA and EPA, indicating that LOX could partly contribute to lipid oxidation during surimi production and frozen storage. Optimal activity of lizardfish gill LOX was at 25 ° C and pH 7. 5. The enzyme was stable at temperatures below 50 ° C. Lizardfish gill LOX exhibited substrate specificity toward EPA. The enzyme was completely inhibited by 1 mM ethylenediaminetetraacetic acid (EDTA) but activated by 1 mM $Fe^{2+}$, $Na^{2+}$, and $Ca^{2+}$.