Effect of Salts on the Quality of Minced Fish Meat

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Summary

The results of sensory evaluation of kamaboko prepared from the frozen surimi of walleye pollack indicated that the addition of Salt 1 (containing NaCl 99.6% and the other salts such as KCl, $CaCl_2$, $CaSO_4$, $MgCl_2$ and $MgSO_4$ 0.4%), Salt 2 (NaCl 98.2%, the other salts 1.8%) and Salt 3 (NaCl 96.4%, the other salts 3.6%) to the surimi improved the quality of kamaboko ($p<0.01$), but that the addition of only KCl did not improve the quality.

Breaking force and breaking deformation of the kamaboko made from frozen surimi of walleye pollack and sardine meat increased by the addition of NaCl and the other salts. The effective orders of salts' cations and anions were $Na^+>K^+>>Mg^{2+}>Ca^{2+}$ and $Cl^-> SO_4^{2-}>NO_3^->I^->SCN^-$, respectively, the order of lyotropic series.

Contents of adenine nucleotides such as ATP, ADP and AMP and of inosine 5'-monophosphate(IMP) in non-salted frozen surimi of walleye pollack and sardine meat drastically decreased during the storage in a refrigerator at 4 - 5°C. But the content of inosine(HxR) and that of hypoxanthine(Hx) in them increased under

the same condition. The degradation of IMP to HxR in the mince of walleye pollack and that of sardine in cold storage was inhibited by the addition of salts, NaCl, KCl, $MgCl_2$ and $CaCl_2$. In the case of walleye pollack, these salts inhibited strongly the degradation from IMP to HxR. Contrarily, in the sardine mince the degradation from HxR to Hx was inhibited more strongly than that from IMP to HxR, since HxR was accumulated in the mince in cold storage.

Some properties of 5'-nucleotidase and purine nucleoside phosphorylase extracted from the white muscles of walleye pollack and silver whiting were demonstrated. Optimum pHs of 5'-nucleotidase from walleye pollack and silver whiting were 8.0 and 9.0, respectively. Apparent Km value for IMP of walleye pollack enzyme was 0.83 mM, and that of silver whiting enzymes was 0.18 mM. Both enzymes from walleye pollack and silver whiting were un-competitively inhibited by NaCl with the Ki values of 0.38 M and 0.36 M, respectively. $CaCl_2$ and KCl also inhibited the both enzyme activities. Appatent Km values for inosine of purine nucleoside phosphorylase from walleye pollack and silver whiting were 0.20 mM and 0.10 mM, respectively. The enzyme from walleye pollack was not inhibited by NaCl and the other salts such as KCl, $CaCl_2$ and $MgCl_2$. However, the enzyme from silver whiting was noncompetitively inhibited by NaCl with the Ki value of 1.0 M.