

Food Security and Sustainability

June 26-27, 2017 San Diego, USA

Maintaining the taste component in chub mackerel

Hiroko Seki, Natsumi Inoue, Hirotaka Kanda and Naoko Hamada-Sato
Tokyo University of Marine Science and Technology, Japan

Chub mackerel is consumed worldwide. A taste component of chub mackerel is inosinic acid (IMP), which is degraded by the IMP-degrading enzyme (IMPase). Therefore, suppressing IMPase activity is important for retaining IMP in fish. The IMPase activity largely depends on temperature and pH and therefore, these factors need to be controlled. Salt suppresses IMPase activity in several fish and therefore, might have the same effect in chub mackerel. Here, we investigated the effects of temperature, pH and salt on IMPase activity in chub mackerel. To prepare the enzyme solution, the fish flesh was homogenized with twice its weight of pure water and dialyzed against pure water. A 0.5 mL of enzyme solution was added to the reaction mixture (a final concentration of 33 mM K₂HPO₄ buffer [pH 6] or 50 mM buffer [succinic acid/NaOH: pH 4-8 or maleic acid/Tris/NaOH: pH 6-8], 0.83-4.2 mM IMP solution and 0-2.3% NaCl solution) and incubated at 10-60 °C for 24 hours. The reaction was stopped by adding 1.5 mL 10% perchloric acid, which was then neutralized using KOH. Next, the amount of IMP in each reaction mixture was estimated using HPLC. The relative IMPase activity was 65-67% at pH 4-5 and increased to 100% at pH 6, but sharply decreased to 8% at pH 8. Further, the IMPase activity was 45% at 10 °C and increased to 100% at 30 °C, but decreased to 39% at 60 °C. The enzyme activity was suppressed with increasing NaCl concentration: The relative activity decreased from 100% to 6.5% when NaCl concentration was increased from 0% to 1%. Therefore, it is preferable to store chub mackerel at low temperature in 1% NaCl solution with pH 7-8.

Biography

Hiroko Seki is currently a Postdoctoral Fellow in the Course of Safety Management in Food Supply Chain at the Tokyo University of Marine Science and Technology, who specializes in the quality of fish, the preservation of the taste component in fish muscles and the enzymes that are related to the degradation of ATP-related components.

supergirlhiro1010@gmail.com

Notes: