

**Effect of Immersion in Saturated Salt Solution on
Physicochemical Properties of Korean rockfish
(*Sebastes schlegelii*) Muscle**

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Introduction

In Korea, texture is particularly important factor which determines the quality of raw fish meat "sangsunhoe", as like a sashimi in Japan. However, most people in Korea enjoy eating raw fish meat just after death, differently from in Japan. It has generally been accepted that the texture of fish muscle is tough in rigor state and is affected by various handling condition. Rigor mortis of fish occurs within a few hours after death as the first stage of post-mortem change. However, it's progress depends on storage temperature (Iwamoto et al., 1987; Kim & Cho, 1993; Cho & Kim, 1993), killing method (Kim et al., 1993; Cho et al., 1994; Kim et al., 1998), washing (Watabe et al., 1990) and bleeding/or non-bleeding (Cho et al., 1994). These factors resulted in degradation of ATP in muscle and acceleration of rigor mortis progress. Meanwhile, we happen to discovered fish muscle to stiff in salt solution. So, we developed new method to improve the texture of fish meat by immersion in saturated salt solution. However, we still do not know why the texture is improved and then which condition is the most proper. The purpose of the present study was to investigate physicochemical changes in Korean rockfish muscle subjected to saturated salt solution. And we also wanted to find the optimal immersion time in saturated salt solution.

Materials and Methods

1. Materials

Living specimens (400~440g in body weight) was purchased from a local supplier (Dogoon Fisheries Co.). After recovery in 15°C sea water for about 6 hours. Fishes were immersed in saturated salt solution for 5, 10, 15 min, respectively. Control was killed by spiking at the brain of fish.

2. Methods

Rigor index of fish was measured as a parameter of rigor tension essentially according to Bito et al. (1983). Toughness was measured using rheometer (Fudoh Kogyo Co.) according to Ando et al. (1991a). ATP and it's related compounds were determined by the method of Iwamoto et al. (1987). Lactate was determined by the method of Backer and Summerson (1941). Myofibrils were prepared according to Perry and Grey's method (1956) with some modifications. All procedures were carried out at 0~4°C. ATPase activities were assayed by the method of Kim et al. (1998). Liberated γ -inorganic phosphate was measured by the method of Fiske and Subbarow (1925).

Results and Discussion

1. Acceleration of full rigor was faster in the samples of the ones immersed in saturated salt solution than in samples that were killed instantly, as the immersion time was longer, the rigor-mortis was faster. Though onset of rigor-mortis and full rigor were rapid in the samples of immersed in saturated salt solution, the rigor index of full rigor was lower.

2. The total concentration of ATP and it's related compounds remained about 7.2 umole/g and were similar in all cases but the ATP contents were lower in the samples of the ones immersed in saturated salt solution, as the immersion time was also longer, ATP contents were lower.

3. The contents of lactate for each samples immersed for 5, 10 and 15 minute were 8.0198 ± 0.2966 umole/g, 8.5994 ± 0.2653 umole/g and 9.7395 ± 0.0835 umole/g. On the other hand, in the samples that were killed instantly, the contents were only 7.4670 ± 0.1991 umole/g. From these results, as the immersion time was longer, lactate contents were more increased.

4. The breaking strength in muscle of rockfish was 1.5270 ± 0.2090 kg in samples that were killed instantly. The breaking strength in samples immersed in saturated salt solution increased slowly and showed the maximum value over 15 minute (1.6050 ± 0.1992 kg).

5. The ATPase activities of rockfish myofibril in the samples of the ones immersed in saturated salt solution for 5 and 10 minute were lower than in the samples that were killed instantly. however, when the samples immersed for 15 minute, it showed the highest activity.

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