

(TECHNICAL NOTE)

Effect of Anesthesia Killing and Non-Bleeding on the Breaking Strength of Plaice Muscle

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Firmness is a very important factor for evaluation of the quality of raw fish meat. The Firmness of fish meat depends on its species (Hatae et al., 1986) and total amount of collagen in fish muscles contribute to its firmness (Sato et al., 1986). Cho (1992) reported that the breaking strength of fresh plaice muscle showed maximum value after 10 hrs storage at 0°C or 5°C. Dipping in seawater including anesthetic was more effective in delaying times reached around maximum breaking strength of fresh plaice flesh than spiking treatment at the early periods after death (Cho and Lee, 1993)

In the present study, the effect of anesthesia killing (dipping in seawater including anesthetic) without bleeding on the rheological changes of plaice muscle were studied. Live plaice, *Paralichthys olivaceus* (38~42 cm) was killed by three different methods : spiking at the brain instantly with bleeding, dipping in seawater including anesthetic (2,000 ppm of ethyl-aminobenzoate) for 10 min with or without bleeding. These samples were stored at 0°C and used in checking the breaking strength through storage. At selected time intervals, breaking strength of plaice muscle was measured by the following method. A slice of 10 mm in thickness was cut off from the middle part of the dorsal muscle of plaice. A cylindrical plunger (10 mm in diameter) was pierced into the slice by rheometer (SUN RHEOMETER Model-CR-100D) was regarded

as the breaking strength. Data were expressed as the average of 6~8 individuals.

Fig. 1 shows the changes in the breaking strength of plaice muscle during storage at 0°C. The level of breaking strength was 1736.2 ± 65.4 g in the muscle immediately after death. Breaking strength of samples killed by spiking at the brain instantly with bleeding and dipping in seawater including anesthetic with bleeding increased gradually and showed maximum value at 10 hrs (2207.3 ± 60.2 g) and 13 hrs (2147 ± 29.0 g) after killing, respectively. The fresh flesh dipped in seawater including anesthetic without bleeding showed the minimum increase of breaking strength among the all samples at 13 hrs (2046.8 ± 67.4 g). However, the breaking strength remained until 20 hrs passed after death.

From the results, it could be suggested that anesthesia killing and non-bleeding is more effective in maintaining the firmness of fresh plaice muscle than spiking killing with bleeding at the early period after death.

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