

The effects of baits and water temperature on taste components after storage of the Pacific oyster, *Crassostrea gigas*

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Abstract

We stored oysters ready for shipment in fish tanks for 5 days in order to investigate the effects of baits and water temperatures on their taste compositions. Three plankton species, *Nannochloropsis* sp., *Chaetoceros calcitrans*, and *Chaetoceros gracilis* were employed as baits, and the study was conducted at 10°C and 20°C. There were 7 oyster groups including a control group. For the group of the oysters fed on *Nannochloropsis* sp. and monitored at 10°C, the level of alanine, which is related to sweetness, was significantly higher than those found in the control groups. The level of phenylalanine, which is related to bitterness, was significantly lower in all bait groups than in the control group. Among all groups, no difference was exhibited in the levels of AMP and glycogen, nor in the sensory evaluation. The oysters stored at 20°C showed decreased levels of a number of free amino acids. This was especially so for those fed on the *Nannochloropsis* sp. in which the level of AMP and the scores obtained in the sensory evaluation were also low. It can therefore be concluded that an improved taste may be imparted to oysters by storing them with plankton baits. A storage temperature of 10°C yielded better results than those obtained at 20°C.

Keywords : Pacific oyster, taste components, free amino acids, ATP-related compounds, storage

I Introduction

We previously studied the effect of culture method¹⁾, culture duration²⁾, production location³⁾, etc., on oyster taste via chemical analysis of taste components and by taste analysis involving sensory evaluation and a taste-sensing system. Oysters are conventionally cultured using a method in which many young oysters are attached to scallop shell platforms suspended in the sea. After harvest, most oysters are shipped soon or after UV sterilization under water for more than 24h for eating raw^{4, 5)}. Suspended oysters were fed plant planktons floating in the sea⁶⁾. The distribution of plant planktons fluctuates according to marine location and seasons, and those fluctuations are known to affect oyster taste⁷⁻⁹⁾. Yamaguchi¹⁰⁾ reported a study aimed at improving oyster taste. In that report, European oysters, *Ostrea edulis*, were stored in a tank and fed for a given period. There were,

however, very few reports about effects of storage on oyster taste. Subsequently, we attempted an investigation of the effect of storage with three species of bait planktons on the taste of Pacific oysters collected in Hiroshima, Japan. The baits used were *Nannochloropsis* sp., which are often cultivated via seedling production, and *Chaetoceros calcitrans*, as well as *Chaetoceros gracilis*, both of which are commercially available. Furthermore, since the level of intake by the Pacific oyster depends on water temperature^{11, 12)}, we also investigated the effect of water temperature (10°C and 20°C) on each oyster group fed with the three species of planktons.

II Materials and Methods

1. Samples

Storage experiments were performed at a wholesale trade

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