

Taste difference between male and female oysters

(Received August 28, 2024)

(Accepted November 5, 2024)

Chika Kitaoka-Saito^{a, b)}, Yuko Kato-Yoshinaga^{a)}

a) Department of Food and Life Science, School of Life and Environmental Science, Azabu University

b) Department of Nutritional Science Faculty of Applied Bioscience Tokyo University of Agriculture

Abstract

The Pacific oyster, *Crassostrea gigas*, sexually differentiates each year during the reproductive season. According to those involved in oyster aquaculture, the taste of mature oysters differs depending on sex; however, these taste comparisons have not been scientifically reported. In this study, we used a microscope to observe the sex differentiation of oysters caught in four collections in April and May. Sexes of most oysters could not be distinguished in mid-April; however, sex was discriminated in all oysters in May, which was the maturation stage before releasing egg and spawning. Extracts of oysters from the period when the sexes were identified were subjected to chemical component analysis; the levels of free amino acids, ATP-related compounds, and glycogen were quantified, and each sex underwent sensory evaluation. The results showed that males contained more glycine related to sweetness, aspartic acid for umami, and arginine for bitterness, which are characteristics of marine products, than females. In addition, the sensory evaluation in late May revealed “sweetness,” “umami,” “oyster-like smell,” and “preference” to be significantly higher in males than in females, although no difference was observed in the sensory evaluation two weeks ago. Adenine, which is not usually detected in ATP-related compound analyses, was only detected in males during the reproductive stage.

Keywords : Pacific oyster, male and female, taste components, free amino acids, adenine

I Introduction

Oysters undergo sexual differentiation during the annual breeding season, depending on environmental factors and individual nutritional conditions. Domestic oysters are supposed to be consumed during the month with the letter “R” in the year; however, mature oysters that have differentiated into males and females before the release of eggs and sperm are also available in the market. Although oyster farmers state that the taste of oysters during this period differs depending on the sex, no scientific reports have compared the taste and taste components. In this study, we used oysters collected in April and May to determine the time at which sex discrimination was possible and examine whether sex differences affected the taste of oysters at that time.

II Materials and Methods

1. Samples

The samples were the Pacific oyster, *Crassostrea gigas*, cultured hanging from rafts owned by Takata Suisan in Kure City in the waters surrounding Nasake-jima Island, Hiroshima Prefecture (34°9'43.2"N, 132°34'30"E). These oysters were transported to Azabu University under refrigeration and were extracted immediately after arrival on May 27, 2017, April 13, May 11, and May 25, 2019.

The sample extract was prepared in accordance with our previous report¹⁾.

2. Weight, and moisture content

After measuring the total weight of oysters with shells, the shells were opened. The soft tissues were lightly wiped from the surface and its weight was measured. The moisture content was measured as previously reported¹⁾.