Title	Evaluating the freshness of raw oysters during storage using the SPME and TBA methods
Author	T. Zhang, Z. Xu, W. Prinyawiwatkul, J.W. Bell and M.W. Moody
Citation	Book of Abstracts, 2004 IFT (Institute of Food Technologists) Annual Meeting and Food Expo, 13-16 July 2004, Las Vegas, Nevada, USA. 321 pages.
Keyword	oyster; freshness; SPME; TBA

Abstract

Louisiana produces approximately 10 million pounds of raw oysters annually. Oyster is a high-value seafood product and preferably eaten raw. The freshness of raw oyster during storage is critical to consumer acceptance. Developing analytical methods to monitor the freshness of raw oyster is, therefore, important for quality control purposes. The volatile compounds produced in oyster flesh during lipid oxidation can be used to indicate its freshness during storage. Our objectives were (1) to identify volatile compounds produced in raw oyster flesh during lipid oxidation and (2) to investigate changes of volatile compounds and TBA values during storage. Fresh raw oyster samples were homogenized, stored at 0°C, and drawn every other day up to 11 d for the SPME and standard TBA tests. For the SPME test, 10 g of oysters was placed in a flask and 4-methyl-2-pentanone was spiked as an internal standard. The flask was incubated at 60 °C in a temperature-controlled water bath. The headspace volatile compounds were absorbed by SPME-PDMS fiber for 30 min. The GCMS was used to identify and quantify the volatile compounds. The concentration of hexadiene, hexanol, and 2,5-hexanedione increased during storage. These 3 compounds are considered as off-flavor compounds that are the products of lipid oxidation and are closely related to the oyster freshness. During 11 d storage, the TBA results indicated that the oyster freshness gradually decreased, while the SPME results indicated that the quality of oysters was deteriorating rapidly, thus not appropriate for consumption. The SPME method was more effective and sensitive in determining the freshness of oyster during storage. The quantitative protocol for the analysis of oyster freshness developed in this project can be used for quality control purposes. Information from this study is useful to the oyster industry for market expansion and management of high quality raw oysters.