

# Aroma characteristic of hot-air-dried processed *Penaeus vannamei*

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## Outline

1. Introduction
2. Flavor profile of dried shrimp at different processing stages
3. Similarity of aroma attributes in hot-air-dried shrimp (*Penaeus vannamei*) and its different parts using sensory analysis and GC-MS.
4. Conclusion

## Abstract

*Penaeus vannamei* is one of the most widely consumed marine products because of its high nutrition and economic values. The production of dried shrimp is an inexpensive and convenient processing. The main components of shrimp are proteins, lipids, sugars, and inorganic salts, and their amounts in different parts were varied, so there is variation of aroma profiles among different parts. This study analyzed changes in the flavor of dried shrimp during its processing by the combination of electronic nose (e-nose), gas chromatography (GC)-ion mobility spectrometry (GC-IMS), and GC-mass spectrometry (GC-MS) combined with solid-phase microextraction (SPME). Sensory analysis was utilized to understand the flavor attributes in different parts of shrimp. The odor activity value (OAV) was calculated to determine the importance of aroma-active compounds (AAC). A cluster analysis (CA) method was used to determine the similarities of aroma profiles between whole shrimp and its parts. The potential correlations among sensory attributes and volatile compounds were analyzed by partial-least-squares regression (PLSR). According to the principal component analysis (PCA) scoring plot of e-nose, the aroma profiles of boiled and dried shrimp were similar, except for that of raw shrimp. According to the results of OAV, identifying that raw shrimp is almost odorless and the main potent odor compound in the boiled shrimp sample is 1-octene-3-ol (mushroom-like). Trimethylamine and pyrazines were mainly produced during the drying period and pyrazines considerably increased in the later drying period. Fourteen AACs were found the common constituents in hot-air-dried epidermis (HDE) and the whole shrimp, both showed similar volatile contents. PLSR shows that the results of sensory analysis and AACs is corresponding. CA results showed that hot-air-dried whole shrimp (HDWS) and HDE were of the highest similarity and were in the first classified in a cluster. AACs summations and sensory scores of hot-air-dried head, shell, and meat decreased to various degrees after removal of shrimp epidermis. It was concluded that shrimp epidermis made an important contribution to the formation of shrimp aroma. Second the key aroma in dried shrimp were N-containing heterocyclic compounds, trimethylamine, sulfur-containing compounds and carbonyl compounds. Third drying for 4 hours HDE could make the best dried shrimp aroma.

## Reference

**Hu, M., Wang, S., Liu, Q., Cao, R., & Xue, Y.** (2021). Flavor profile of dried shrimp at different processing stages. *Lwt - Food Science and Technology*, *146*, 111403.

**Zhang, D., Ji, H., Liu, S., & Gao, J.** (2020). Similarity of aroma attributes in hot-air-dried shrimp (*Penaeus vannamei*) and its different parts using sensory analysis and GC–MS. *Food Research International*, *137*, 109517.