

## Preparation of a Natural Flavoring Substance from the Pink-spotted Shrimp By-product by Hot-water Extraction and Its Characteristics

Jin-Soo Kim, Min-Soo Heu, Moon-Lae Cho, Hyo-Do Shim,  
Hey-Suk Kim and In-Soo Kim

Division of Marine Bioscience/Institute of Marine Industry, Gyeongsang National  
University, Tongyeong 650-160, Korea

### Instroduction

Shrimp is rich in protein, calcium, vitamins and various extractable compounds and has been used as one of the most popular and important raw materials for many Korean dishes. Shrimp is processed mostly as a fresh product, salt-fermented product, dried product and frozen product. The fresh product and frozen product among these products generate by-products such as the head, shell and tail portions during processing. These by-products account for about 50 % of total shrimp weight. Recently, with the rapid growth of the fast food industry, consumption of shrimp has increased. Increasing production of inedible parts of shrimp such as head, shell and tail is causing environmental problems. However, shrimp processing by-products such as head, shell and tail contain abundant nutritive component(total amino acid and mineral) and taste active component(free amino acid and ATP related compound, etc) and contain in trace amounts of the volatile basic nitrogen content, viable cell count and heavy metal content. In this sense, the shrimp processing by-products can be acceptable as a raw material for seafood processing. Studies on shrimp include those on physicochemical properties of salt-fermented shrimp, shrimp freshness during cold storage, flavor components, characteristics of shrimp proteases, and natural antioxidant extraction from shrimp. Efforts have also been under way to utilize shrimp shell by-products for the extraction of carotenoprotein, chitin, chitosan and application of those to other food processing. However, there are few studies on utilization of shrimp by-products including head, shell and tail. This study was carried out to develop natural flavoring substance from pink-spotted shrimp processing by-product by hot-water extraction.

## Material and Methods

Pink-spotted shrimp processing by-products (PSB) such as a head, shell and tail were collected from traditional markets located in Tongyeong, Korea. The frozen PSB was chopped, agitated with water of same amount to the chopped PSB and then extracted by hot water (95°C). The hot-water extracts was centrifuged and filtered to separate the liquid fraction from the residue. This liquid fraction was made up 200 mL and used as a sample. The optimal extraction condition and quality characteristics for preparation of natural flavoring substance using PSB were investigated by determining proximate composition, pH, acidity, amino-N, total-N, volatile basic nitrogen(VBN), yields, omission test, free amino acid, total creatinine, trimethylamine (oxide), turbidity, SDS-polyacrylamide gel electrophoresis, molecular weight and sensory evaluation.

## Results

This study was carried out to develop a natural flavoring substance using pink-spotted shrimp processing by-products ( head, shell and tail ) by hot-water extraction. Judging from amino-N, total-N and sensory evaluation, the optimal extraction condition was revealed 60 min for preparation of a natural flavoring substance using pink-spotted shrimp processing by-products. From results of omission test, the main taste component was free amino acid in the water extracts using pink-spotted shrimp processing by-products(WEB) prepared from optimal condition. The free amino acids considered threshold value in aspartic acid and glutamic acid were the major constituent. The WEB was similar to the water extracts from pink-spotted shrimp muscle as a natural flavoring substance. From the results of chemical experiments and sensory evaluation, the WEB could be utilized as a natural flavoring enhancer for shrimp related fish products.

## Reference

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