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Optimization of high-pressure processing in extraction of astaxanthin from Penaeus monodon carapace using response surface methodology (Article)

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Abstract

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Penaeus monodon is a species of shrimp with astaxanthin content that prevents various diseases and enhances immune system. High-pressure processing (HPP) is capable of achieving higher extraction astaxanthin yield within short processing time. The aim of this research was to optimize the extraction condition of astaxanthin from P. monodon using HPP using response surface methodology (RSM). The investigation was carried out using variables: pressure (150–250 MPa), holding time (10–20 min), and amount of acetone-methanol mixture, 7:3, vol/vol (3–7 ml). The optimum condition was achieved at the pressure of 238.54 MPa, 16.29 min of holding time, and 6.59 ml of solvent mixture. The optimum yield of astaxanthin was 95.17 μg/gdw. The R^2 value was 0.9836 and the adjusted-R^2 value was 0.9688. These values indicate that the application of RSM to optimize the yield of astaxanthin with HPP has a significant impact in enhancing the yield of astaxanthin. © 2018 Wiley Periodicals, Inc.

SciVal Topic Prominence

Topic: astaxanthin | Xanthophylls | astaxanthin accumulation

Prominence percentile: 97.798

Reaxys Database Information

View Compounds

Indexed keywords

Engineering controlled terms: Acetone | Mixtures | Surface properties

Engineering uncontrolled terms: Extraction conditions | High pressure processing | Methanol mixtures | Optimum conditions | Penaeus monodon | Response surface methodology | Short processing time | Solvent mixtures

Engineering main heading: Extraction

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