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Anti-fatigue activity of sea cucumber peptides prepared from *Stichopus japonicus* in an endurance swimming rat model.

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Abstract

BACKGROUND: Sea cucumber (*Stichopus japonicus*) is a well-known nutritious and luxurious seafood in Asia which has attracted increasing attention because of its nutrition and bioactivities in recent years. In this study, the anti-fatigue activity of sea cucumber peptides (SCP) prepared from *S. japonicus* was evaluated in a load-induced endurance swimming model.

RESULTS: The SCP prepared in this study was mainly made up of low-molecular-weight peptides (<2 kDa). The analysis result of amino acid composition revealed that SCP was rich in glycine, glutamic acid and proline. The endurance capability of rats to fatigue was significantly improved by SCP treatment. Meanwhile, the remarkable alterations of energy metabolic markers, antioxidant enzymes, antioxidant capacity and oxidative stress biomarkers were normalized. Moreover, administration of SCP could modulate alterations of inflammatory cytokines and downregulate the overexpression of TLR4 and NF- κ B.

CONCLUSION: SCP has anti-fatigue activity and it exerted its anti-fatigue effect probably through normalizing energy metabolism as well as alleviating oxidative damage and inflammatory responses. © 2017 Society of Chemical Industry.

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KEYWORDS: anti-fatigue effect; anti-inflammatory effect; antioxidant activity; energy metabolism; sea cucumber peptides

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