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Physico-chemical characteristics and fibril-forming capacity of carp swim bladder collagens and exploration of their potential bioactive peptides by *in silico* approaches

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Highlights

- Carp swim bladder collagens were extracted and characterized as type I
- *In silico* proteolysis of carp collagens released various bioactive peptide sequences
- Toxicity and sensory characteristics of antioxidative peptides were evaluated
- Understanding the fisheries by-products significance for sustainable valorization
- Carp collagens can be used as potential functional ingredients in food industries

Abstract

This study explores the sustainable valorization of carp swim bladder by-products. The high-value molecule collagens were successfully extracted from carp swim bladder with a yield of ~ 60% (dry weight basis) and characterized by sodium dodecyl sulfate polyacrylamide gel electrophoresis, UV-spectrum and Fourier transform infrared spectroscopy. The extracted collagens showed the fibril-forming ability and high denaturation temperature (38-39 °C). Furthermore, the extracted collagens subjected to preparing bioactive collagen hydrolysates with potential antioxidant activities. *In vitro* and *In silico* approaches

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