
An enzyme strategy for trimethylamine remediation in salmon protein hydrolysates supported by cofactor recycling

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Résumé

The processing of fish for human consumption gives rise to 50 to 70% by-products, such as heads, frames, viscera, blood, and trimmings. Enzyme-based conversion of marine biomass to high-quality peptide ingredients is an attractive strategy in bio-based industries. Despite their good nutritional profile and food grade quality, these peptide ingredients remain mostly used in pet food due to the fish smell. A well-known contributor to the smell of fish is trimethylamine (TMA). Current strategies to mask or remove the odor are not effective or give rise to undesirable side effects. Bacterial trimethylamine monooxygenases (TMM) can oxidize TMA into the odorless trimethylamine N-oxide. The TMM enzyme are cofactor-dependent, which creates a road-block for industrial implementation. As a proof-of-concept, we have shown that glucose dehydrogenase can be supplemented for cofactor recycling, maintaining TMMs activity over time. The dual enzyme system is a strategy that can be used to obtain reduced TMA levels in a salmon protein hydrolysate, thereby potentially expanding the application range of protein hydrolysates.

Mots-Clés: protein hydrolysates, biorafinery, enzymes

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