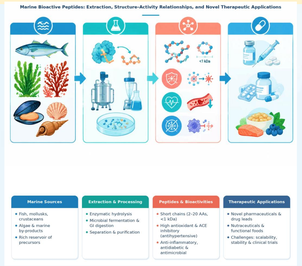
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# Marine Bioactive Peptides: Extraction, Structure-Activity Relationships, and Novel Therapeutic Applications

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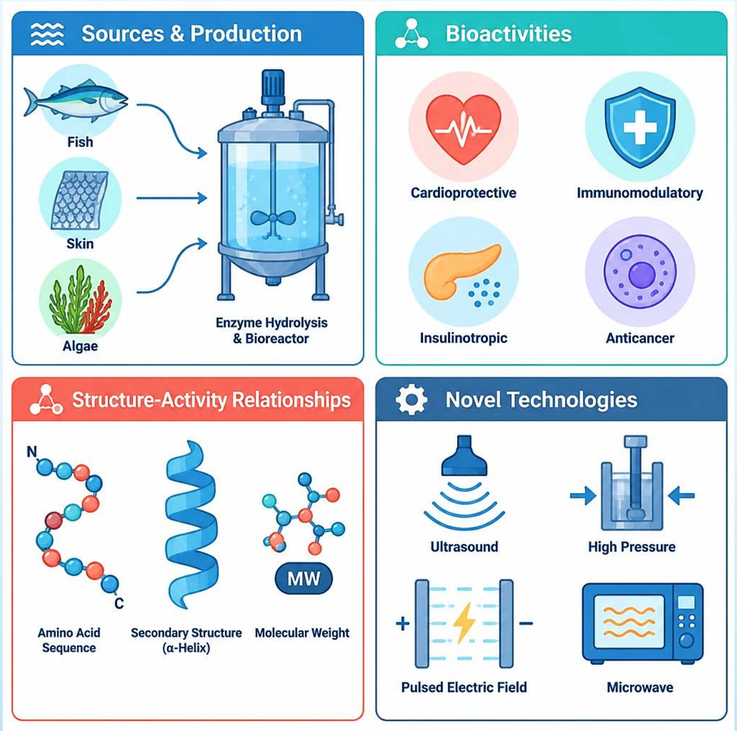
## Backgrounds

Marine bioactive peptides (MBPs) are promising therapeutic agents with unique structural diversity and multifunctional bioactivities. They are obtained from fish, mollusks, crustaceans, algae, and marine by-products. MBPs exhibit antioxidant, antihypertensive, antidiabetic, antimicrobial, anti-inflammatory, and anticancer activities. Short-chain peptides (<1 kDa) show superior bioactivity. Hypertension affects 1.28 billion adults worldwide, and ACE-inhibitory peptides offer a natural alternative to synthetic drugs.

## Methods

A comprehensive literature review was conducted using PubMed, Scopus, and Web of Science (2021–2026). Keywords included: marine bioactive peptides, ACE-inhibitory peptides, antioxidant peptides, structure-activity relationship, enzymatic hydrolysis. Inclusion criteria: marine-derived peptides, extraction/purification, SAR, therapeutic applications. Exclusion: terrestrial peptides, lack of experimental data, non-peer-reviewed. Data on peptide sequences, sources, molecular weights, $IC_{50}$ values, and mechanisms were extracted.

## Findings




## Conclusion

MBPs are a sustainable source of therapeutic agents for pharmaceuticals, nutraceuticals, and functional foods. Key determinants of bioactivity: molecular weight (<1 kDa), amino acid composition, and spatial conformation. Challenges remain: scalable production, standardization, clinical validation, and oral bioavailability. Future research should focus on structure-activity elucidation, in vivo efficacy, and efficient delivery systems.

## References

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