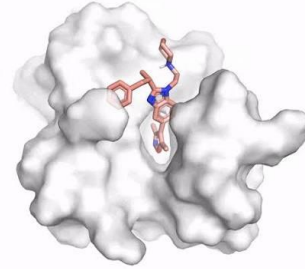
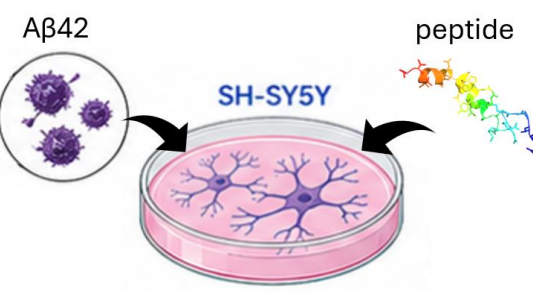


Pipeline For The Discovery And Development Of New Marine-derived Peptides For The Treatment Of Alzheimer's Disease

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Our pipeline successfully identified and optimized marine-derived peptides that prevent Aβ42 neurotoxicity and reduce plaque formation, offering a potent new scaffold for multi-target Alzheimer's interventions.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Peptides are compounds with molecular mass of 1000 to 10000 Da, positioned between proteins and small molecules, combining the high selectivity and specificity of proteins with the structural stability of smaller compounds. Animal biodiversity, particularly marine animals, offers a rich source of peptides scaffolds for drug discovery, and some of them have demonstrated success in clinics. This study aims to identify and optimize marine-derived peptides for the treatment of Alzheimer's Disease (AD).	We developed an integrated pipeline combining <i>in silico</i> and <i>in vitro</i> tools to select and validate peptides targeting specific AD targets. Following the sequencing of peptides from Brazilian marine animals' venom, candidates were filtered based on their physicochemical properties. Top-scoring peptides were analyzed by molecular docking to assess binding affinity and ranked again. The best sequences were further refined using artificial intelligence optimization tools and selected leads were synthesized for <i>in vitro</i> validation.	Library of 578 peptides Druggability Binding affinity  targets involved in autophagy, neuroinflammation or amyloidogenesis 6 peptides Optimization by AI 2 new peptides In vitro tests  1 new bioactive peptide for AD	Our pipeline successfully identified novel peptides capable of modulating key AD targets. These results suggest that marine-derived venom peptides serve as promising scaffolds for the development of next-generation Alzheimer's therapies.	HU, D. et al. Application of marine natural products against Alzheimer's disease. <i>Marine Drugs</i>, 2023. KIM, S.; WIJESINGHE, D. Marine peptides as therapeutic agents: anti-inflammatory mechanisms. <i>International Journal of Biological Macromolecules</i>, 2023. LI, Z. et al. Marine bioactive peptides with antioxidant and anti-inflammatory properties. <i>Food Chemistry</i>, 2022. LIN, X. et al. Marine-derived compounds with anti-Alzheimer's disease activities. <i>Marine Drugs</i>, 2021. PRIYADHARSHINI, P. et al. Marine sponge metabolites as promising therapeutic agents investigated through molecular docking approaches. <i>Biomedical and Biotechnology Research Journal</i>, 2024. ZHAO, Y. et al. Bioactivity of marine-derived peptides and proteins: a review. <i>Marine Drugs</i>, 2024.
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