Tipo	Periódico
Título	Echinometra lucunter molecules reduce Aβ42-induced neurotoxicity in SH-SY5Y neuron-like cells: effects on disaggregation and oxidative stress
Autores	da Silva AG, Alves MDM, da Cunha AA, Caires GA, Kerkis I, Vigerelli H, Sciani JM.
Autor (es) USF	da Silva AG, Sciani JM
Autores Internacionais	-
Programa/Curso (s)	Programa de Pós-Graduação Stricto Sensu em Ciências da Saúde
DOI	10.1590/1678-9199-JVATITD-2023-0031
Assunto (palavras chaves)	Alzheimer's disease; amyloid peptide 42; oxidative stress; protein clearance; sea urchin.
Idioma	Inglês
Fonte	Título do periódico: J Venom Anim Toxins Incl Trop Dis ISSN: 1678-9199 Volume/Número/Paginação/Ano: 29:e20230031, 2023.
Data da publicação	01/12/23
Formato da produção	Impressa ou digital
Resumo	Background: Echinometra lucunter is a sea urchin commonly found on America's rocky shores. Its coelomic fluid contains molecules used for defense and biological processes, which may have therapeutic potential for the treatment of amyloid-based neurodegenerative diseases, such as Alzheimer's, that currently have few drug options available. Methods: In this study, we incubated E. lucunter coelomic fluid (ELCF) and fractions obtained by solid phase extraction in SH-SY5Y neuron-like cells to evaluate their effect on cell viability caused by the oligomerized amyloid peptide 42 (Aβ42o). Moreover, the Aβ42o was quantified after the incubation with ELCF fractions in the presence or not of cells, to evaluate if samples could cause amyloid peptide disaggregation. Antioxidant activity was determined in ELCF fractions, and cells were evaluated to check the oxidative stress after incubation with samples. The most relevant fraction was analyzed by mass spectrometry for identification of molecules. Results: ELCF and certain fractions could prevent and treat the reduction of cell viability caused by Aβ42o in SH-SY5Y neuron-like cells. We found that one fraction (El50) reduced the oligomerized Aβ42 and the oxidative stress caused by the amyloid peptide through its antioxidant molecules, which in turn reduced cell death. Mass spectrometry analysis revealed that El50 comprises small molecules containing flavonoid antioxidants, such as phenylpyridazine and dihydroquercetin, and two peptides. Conclusion: Our results suggest that sea urchin molecules may interact with Aβ42o and oxidative stress, preventing or treating neurotoxicity, which may be useful in treating dementia.
Fomento	FAPESP