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Influence of Solvents on the Extraction Efficiency and Biological Activity of Marbled Eel Mucus

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Abstract

Marbled eels are migratory between freshwater, brackish, and saltwater environments. Eel mucus contains biological components that are essential in protecting against environmental pathogens. The biological activity of mucus depends on endogenous and exogenous factors. This study aimed to determine the influence of solvents in extracting bioactive compounds from marbled eel mucus for aquaculture and human healthcare applications. The results show that different solvents affect the composition and biological activity of the extract from marbled eel mucus. The extracts have 19-23 other peaks of compounds, with retention times ranging from 0.8 to 60.0 minutes on high-performance liquid chromatography (HPLC). The selective extraction rate of components (% area) has significant differences between extracts with different solvents. The eel mucus extracted with acetone solvent exhibited the highest biological activity in all tests: $IC_{50} = 36.603$ mg/mL and $SC\% = 98.424\%$ at 100 mg/mL for antioxidant activity; Antibacterial activity was demonstrated against *S. aureus* ($IC_{50} = 65.00 \pm 3.01$ μ g/mL) and *B. subtilis* ($IC_{50} = 112.00 \pm 7.89$ μ g/mL); The ability to inhibit human skin cancer cells ($IC_{50} = 465.96 \pm 8.54$ μ g/mL) and normal cells ($IC_{50} = 453.36 \pm 17.88$ μ g/mL). Extracts extracted with n-Hexane solvent showed higher safety for cells than extracts from other solvents ($IC_{50} = 632.43 \pm 18.80$ μ g/ml, higher than the value $IC_{50} = 545.25 \pm 26.36$ μ g/ml for skin cancer cells). These results provide essential data for selecting and applying products derived from extracts of marbled eel mucus in the future, sparking excitement and optimism about this research's potential impact on aquaculture and human health care.

Keywords: Solvents, Mucus Extract, Efficiency, Bio-compounds and Bioactive