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A comprehensive study on the effect of lanthanide complexes on *Acanthamoeba* sp

The activity of lanthanide with different chelating agents in protozoan species, have not been reported so far. In this study, anti-amoebic activity of lanthanide complexes with different chelating agents (as ligands) were assessed on a clinical isolate of *Acanthamoeba* sp. Complex of lanthanide elements such as europium, cerium, praseodymium, neodymium, dysprosium and samarium salt with EO3, EO4, EO5 as well as 18C6, as ligands were compared for their cytotoxicity effect on *Acanthamoeba*. We also found that cytotoxicity of different ligand on lanthanide might induce different type of cell death which are apoptosis, autophagic and necrosis cell death. Computational model of different ligands of Samarium (Sm) with EO5 or 18C6 interaction with profilin 1B (PDB ID: 1ACF), an actin-binding protein in *Acanthamoeba* cells showed possible interaction for the SmEO5 complex with profilin 1B, however, the Sm with 18C6 ligand model was unable to identify possible docking site at potential on profilin. This lack of interaction is due to tertiary conformation of profilin does not favour the generation of hydrogen bond with the Sm18C6 cyclic structure. For the SmEO5, the protein-ligand predicted interaction is at hydrophilic pockets of the protein located at Thr and Ser residues. We also found that level of cytotoxicity of lanthanides to *Acanthamoeba* is inflected by their position in the periodic table. Across the periodic table from left to right, the reactivity and relative atomic mass of lanthanides element increases. Our assessment showed that the toxicity of lanthanides decreases as the atomic number increases.

Biography

Fatimah Binti Hashim has her expertise in protozoology and cytotoxicity based on microscopy analyses. Most of the works are on cytotoxic effects of plant compound, plant extract, lanthanide complexes on *Acanthamoeba* sp. (corneal scraping and environmental isolates). Recent works are on isolation and identification of protozoan species from fish gills. Microscopy analysis based on fluorescence, scanning and electron microscopy are her interest techniques for cytotoxicity and protozoan morphological identification. Other interests are on molecular work of genotoxicity specifically by alkaline comet assay technique and DNA laddering assay.

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