

Synthesis of Glutamate-Zinc-Aluminium-Layered Double Hydroxide Nanobiocomposites and Cell Viability Study

ABSTRACT

A layered compound of zinc-aluminium layered double hydroxide (LDH) to be used as a host for a guest amino acid, glutamate was synthesized. Different parameters were used and optimized to form amino acid-intercalated pure phase materials. The resulting Bio-Inorganic Nanohybrid (BINH) was chosen for further characterization. BINH exhibits the glutamate to be in vertical or perpendicular orientation to the inorganic layer. Cytotoxicity test indicates that the IC₅₀ value was observed at 3.125 µg/ml. Results from this study will be used in the development of a new delivery system for therapeutic agents comprising amino acids or peptides.

Keyword: Nanobiotechnology, glutamate, layered double hydroxide, bio-inorganic nanohybrid