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Abstract

Structure, Properties and Biological Activity of Chitosan Salts with L- and D-Aspartic Acid †

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Abstract: A comprehensive study of the structure, properties and biological functionality of salt chitosan complexes with L- and D-aspartic acid (AspA) was carried out. It has been established that these polymer salts differ in spatial organization, chirooptic characteristics, surface charge, and macrocoil size. In experiments in vitro on a wide range of biological objects (unicellular algae, planktonic crustaceans, aerobic bacterial microorganisms, cell cultures, and test plants) it was found that the chitosan salt with D-AspA exhibited the best biological activity. The results obtained confirm our hypothesis that the biological homochiral hierarchy principles are most consistent with chitosan (D-aminoglucan) derivatives with the D-antipode of the acid.

Keywords: chitosan; aspartic acid; enantiomers; salt formation; chirooptic properties; biological activity

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