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Synthesis, transport and ionophore properties of α,ω-biphosphorylated azapodands: V. acid-base properties of new phosphorylated azapodands and α,ω-diamines and their participation in the membrane transport of I-III groups metal ions

Garifzyanov A., Davletshin R., Davletshina N., Cherkasov R.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Acid-base properties of newly and previously synthesized phosphorylated azapodands and α,ω-diamines and their amine precursors were studied. We found that they differ in the same range as has been found previously for the other aminophosphoryl compounds. The investigation of the processes of passive membrane ion transport of a series of metals of I-III groups by these reactants showed with all diphosphoryl diamines higher values of the transfer flow of the ions Sc(III), Nd(III), and Sm(III), than the ions of alkali and alkaline earth metals. Under the conditions of active membrane transport the azapodand IV exhibits high efficiency in the ion transport of Sr(II) and Ba(II), while diphosphoryldiamine III exhibits effective transport of Nd(III) ions. The factors that determine the efficiency and selectivity of the membrane extraction of the I-III groups metal ions by these diphosphoryl diamines are discussed. © Pleiades Publishing, Ltd., 2012.

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