

Mixed-ligand metal complexes of fluorosalicylic acids and 2,6-pyridindimethanol

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Increasing number of researches focus on the optimization of therapeutically active compounds. Optimized effect can be achieved by modification of the compound's structure, composition or complexation by metal ions. Salicylic acid is commonly used in medicine, one of its derivatives, acetylsalicylic acid (Aspirin) known worldwide as a painkiller, anti-inflammatory and antipyretic agent. Recent studies have shown that the introduction of fluorine into the otherwise biologically active molecule may further increase its efficiency.

Previously, our research group studied the complexation of fluorosalicylic acid (FSA) isomers with Cu²⁺ ions [1]. The solution structure and stability constants of the complexes have been determined. Furthermore, we specified that FSA and pyridine derivatives mutually promote each other's metal ion coordination forming Cu(FSA)₂(B)₂ (B = N,N-diethyl-nicotinamide or 3-pyridylmethanol) mixed-ligand complexes around physiological pH [2, 3].

In this study we investigated the formation of ternary complexes of FSA isomers and 2,6-pyridindimethanol (pydime) with transition metal ions such as Cu²⁺, Ni²⁺ and Zn²⁺ ions in solution and in solid state. Their behavior towards DNA and their effect on various cancer cell lines were explored under various conditions, by pH-potentiometry, spectroscopic methods, X-ray diffractometry, agarose gel electrophoresis and MTT cell viability assay. Most recent results will be presented.

References:

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