Poster Presentations

[MS38-P01] Inclusion of drugs by calixarenes.

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The design and synthesis of water-soluble, synthetic macrocycles as artificial receptors and biomimetic models for enzymes has been a major subject of great interest in recent years. Self-assembly of this kind of synthetic receptors with biorelevant molecules is a powerful tool for understanding, modeling and mimicking biological systems and developing new materials with specific properties and functions. Along with cyclodextrins, crown ethers and cryptands, calix[n]arenes are one of the most important class of supramolecular hosts. It is well known that biogenic amines, amino acids, peptides, and proteins are one of the most fundamental substrates in biological processes. The family of calix[n]arenes is deeply involved in molecular recognition of these compounds, especially in the understanding of specific biomolecular interactions which play a key role in modern supramolecular chemistry. Water-soluble calixarenes are of interest in building up systems that mimic natural biological processes due to the presence of hydrophobic pockets which can bind nonpolar guests. Moreover, they have also been demonstrated to possess useful potential bioactivity ranging from enzyme inhibition through antithrombotic and antiviral activity to antibacterial properties. The aim of this presentation is to summarize the up-to date knowledge about the solid-state interactions of complexes of certain water-soluble calix[n] arenes with drug molecules. Of the rich chemistry of water-soluble calixarenes that have been synthesized in recent times, the *para*-sulfonatocalix[n]arenes (n = 4, 6, 8) and calix[4] arene diphosphate have been chosen due to their good aqueous solubility, low toxicity, interesting biological activity and ability to generate a wide range of structural variations in solid state complexes. The presence of anionic groups and a hydrophobic cavity coupled with hydrogen bonding capability makes the anionic calixarenes complementary, in the sense of supramolecular chemistry, to many drug molecules containing ammonium functions.

Keywords: calixarenes; drug molecules; inclusion compounds