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A calix[4]arene derivative and its selective interaction with drugs (clofibric acid, diclofenac and aspirin)

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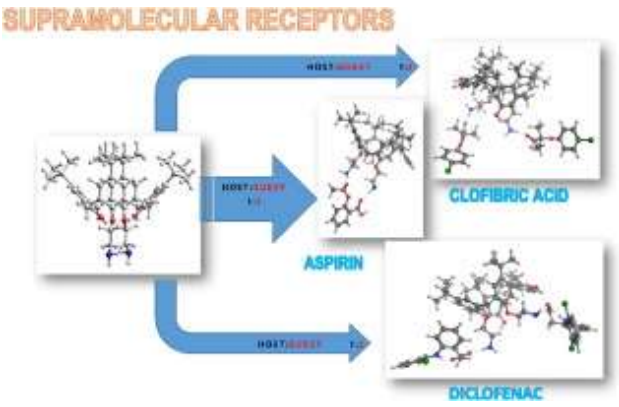
Abstract

The synthesis and characterisation of a partially substituted calix[4]arene, namely, 5,11,17,23-tetra-*tert*-butyl,25,27-bis[aminoethoxy] 26,28-dihydroxycalix[4]arene are reported. Its interaction with commonly used pharmaceuticals (clofibric acid, diclofenac and aspirin) was investigated by spectroscopic (^{1}H NMR and UV), electrochemical (conductance measurements) and thermal (titration calorimetry) techniques. It is concluded on the basis of the experimental work and molecular simulation studies that the receptor interacts selectively with these drugs. Preliminary studies on the selective extraction of these pharmaceuticals from water by the calix receptor are reported and the potential for a carrier mediated sensor based on this ligand for '*on site*' monitoring of pharmaceuticals is discussed.

Graphical abstract



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Keywords

Calixarenes; Clofibric acid; Diclofenac; Aspirin; Thermodynamics; Pharmaceuticals

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