CALIXARENE-BASED GLYCOSIDE CLUSTERS AS POTENTIAL ANTIVIRAL DRUGS

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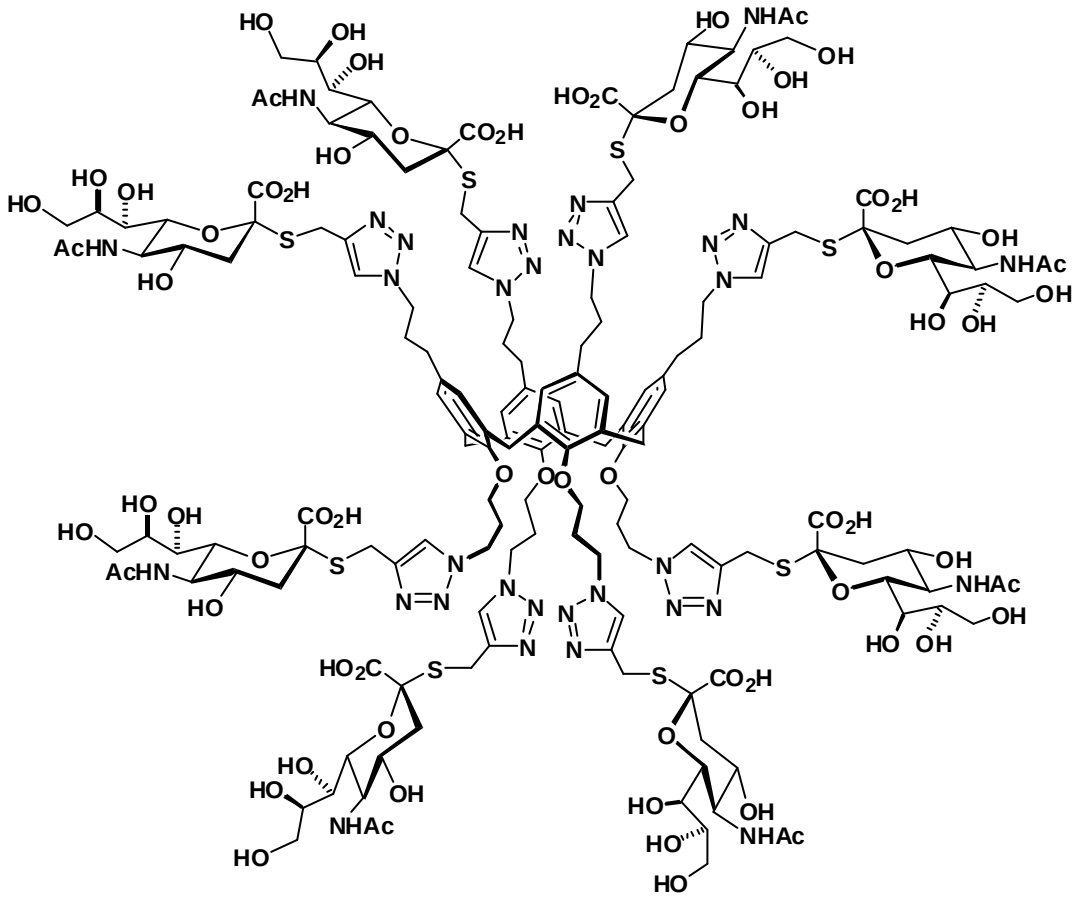
The carbohydrate-protein interaction is a key step in the cell-cell, cell-bacteria, and cell-virus recognition process. In order to compensate for the usually low affinity of monovalent carbohydrate for proteins, a cooperative binding of multiple copies of ligands and receptors takes place in living organisms. We prepared[1] tetra- and octavalent sialoside clusters in good yields exploiting for the first time the multiple copper-catalyzed cycloaddition of a propargyl thiosialoside with upper and lower rim calix[4]arene polyazides. The cycloadducts featured the hydrolytically stable carbon-sulfur bond at the anomeric position and the 1,4-disubstituted triazole ring as the spacer between the sialic acid moieties and the platform. These multivalent sialosides did not manifest cytotoxicity and inhibited, at submillimolar concentrations, the hemagglutination and the viral infectivity mediated by the influenza virus.



[1] Marra, A.; Moni, L.; Pazzi, D.; Corallini, A.; Bridi, D.; Dondoni A. *Org. Biomol. Chem*. **2008**, *6*, 1396-1409.