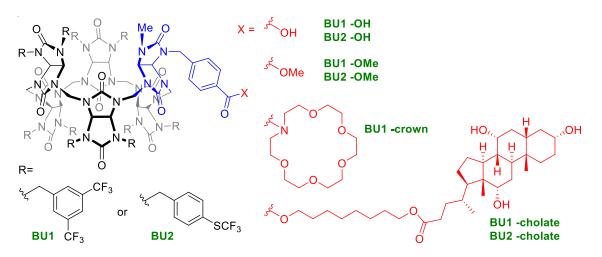
Monofunctionalized Fluorinated Bambus[6]urils

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Bambusurils are macrocyclic substances capable of strong noncovalent interactions with anions. They are made of six glycoluril building units connected via methylene linkers. Bambusurils are appreciated for their exceptionally strong anion binding in organic and aqueous solutions, with the binding affinity to CI^- ranging up to $6 \times 10^{10} \text{ M}^{-1}$ in acetonitrile [1]. Recently, bambusurils with one glycoluril unit different from the others were prepared [2]. This allowed to append one unique functionality per macrocycle for new applications. Here we present a newly developed synthetic strategy allowing us to prepare fluorinated glycoluril building blocks in higher yields and on bigger scale. The glycolurils were used in the synthesis of new fluorinated bambusurils.

Anion transport is an important biological process. When it doesn't work properly in the cells due to malfunctioning proteins, surviving of the whole organism becomes very difficult. Treatment of this type of diseases is usually very expensive and limited or often impossible. If certain criteria are met, anion receptors might be used as anion transporters through lipid bilayers substituting the function of proteins [3]. Appending fluorinated substituents to the bambusuril increased lipophilicity and anion binding strength and resulted in very efficient bicarbonate/chloride antiporters [1]. Herein, the ability of new monofunctionalized bambusuril derivatives to act as anion transporters was investigated. The derivatives were tested in two different assays using fluorescence spectroscopy. The lucigenin dye assay was used to detect chloride transport and the [Eu.L¹]⁺-based dye assay [4] was used to detect bicarbonate transport.



References

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