

Bambusurils with Fluorinated Substituents – Effects on Binding and Transport Properties

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Bambusurils are macrocyclic substances made of six glycoluril building units connected via methylene linkers (Fig. 1).¹ The bambusurils are appreciated for strong anion binding in solution, which was improved even further by introduction of fluorinated substituents, leading to exceptionally high association constants ranging between 10^7 - 10^{11} M⁻¹ in acetonitrile.² Appending fluorinated substituents to the bambusurils did also increase lipophilicity and in combination with high anion binding strength, very efficient bicarbonate/chloride antiporters were obtained.

In this work, new fluorinated bambusuril derivatives were prepared (Fig. 1). This allowed us to study the effect of the bambusuril substituents on anion binding strength and anion transport efficiency of the macrocycles. Preparing derivatives with increasing perfluoroalkyl chain lengths provided series with increasing lipophilicity. On the other hand, oxidation of the trifluoromethyl groups of known derivative made the substituents more electron withdrawing, which in turn enhanced the binding strength.

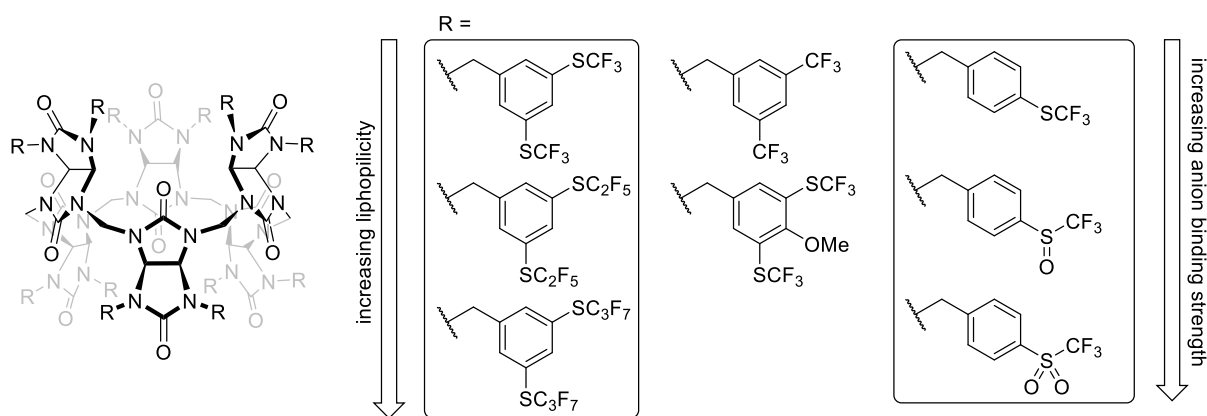


Fig. 1 Studied bambusuril derivatives

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