ANION BINDING OF BIOTINURIL DERIVATIVES ENHANCED BY SILVER CATION

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Biotinurils are chiral macrocycles that consist of natural D-biotin building blocks linked by methylene bridges. The ability of normal biotin[6]uril to bind different inorganic anions into the cavity [1] was employed in anion transport in human transmembrane [2]. Recently, our group developed a mechanochemical approach for amidation of all carboxylate groups on biotin[6]uril structure, resulting in hexa-amide conjugate with phenylalanine methyl ester (Fig 1.) [3].

I will present binding properties of the new derivative, which exhibited higher affinities to anions in methanol than regular biotin[6]uril ester. Previously, Lisbjerg *et al*. reported that cations do not influence the anion binding [1] but we found out that the strength of interaction can be enhanced by the presence of heavy cations. We tested the interactions of the biotinuril derivatives with inorganic silver salts as well as silver sulfates and carboxylates, including chiral compounds.

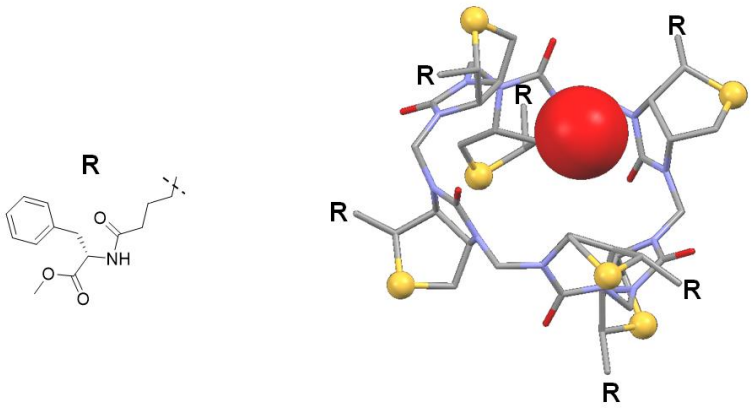

Fig 1. Potential binding sites for hexa-amide (red circle- binding site for anion, yellow circles- binding sites for silver cation)

References

1. Lisbjerg, M. *et al*. Org. Biomol. Chem, **2015**, 13, 369-373.
2. Valkenier, H. *et al. Chem*, **2019**, 5, 2, 429-444.
3. Dalidovich, T., Mishra, K.A., Shalima, T., Kudrjašova, M., Kananovich, D.G., Aav, R, **2020**, ACS Sustain. Chem. Eng., 8, 41, 15703–1571.

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