

## SYNTHESIS AND APPLICATION OF SINGLE-ISOMER CATIONIC CYCLODEXTRIN DERIVATIVES FOR CHIRAL SEPARATION IN CAPILLARY ELECTROPHORESIS

Róbert Iványi\*<sup>1,2</sup>, László Jicsinszky<sup>1</sup>, Zoltán Juvancz<sup>3</sup>, Lajos Szenté<sup>1</sup>

<sup>1</sup>*Cyclolab R&D. Lab., H-1097, Illatos út 7., Budapest, Hungary,*

<sup>2</sup>*Eötvös L. Univ, Dept. of Environm. Chem., H-1117 Pázmány P. 1, Budapest, Hungary*

<sup>3</sup>*VITUKI Plc., H-1095, Kvassay J. út 1., Budapest, Hungary*  
*ivanyi@cyclolab.hu*

Although, chiral capillary electrophoresis based on cyclodextrins (CDs) has been introduced for more than one decade and its developing is still dynamic, the exact mechanism of the enantio-recognition is not completely clarified [1,2]. The systematic study of the enantio-recognition requires further experiments with consistently altered single-isomer selectors and selectands [3]. In this topic among the anionic selectors a nine-member family of single-isomer, sulfated CDs were introduced and thoroughly investigated [4]. In case of cationic selectors a similar work is continuously in progress [5,6], but the comprehensive study of these selectors is incomplete, consequently the application of these selectors have not been exhausted at all yet.

In our previous works different single-isomer 6-monoamino- $\beta$ -CD-type derivatives were synthesized to study the effect of substitution (like steric hindrance and hydrogen bond forming ability) on enantio-separation of acidic enantiomers by capillary electrophoresis. Present work continues this study concentrating the interactions between the monofunctional amino- $\beta$ -CD selectors and pyrethric acid as well as 2-phenoxypropionic acid derivatives. Both selectors and selectands were consistently altered from the standpoint of their chemical structure. Assuming 1:1 stoichiometry of the complexes the apparent complex stability constants were calculated for each selector : selectand complexes. The effect of selector concentration on the chiral separation parameters was also investigated. Considering the data obtained conclusions were made on the influence of substituents (like methyl groups, (hydroxy)alkylamino groups) on the enantio-separation process between these single-isomer amino- $\beta$ CD derivatives and the analyte racemic acids.

[1] Chankvetadze, B., *Capillary Electrophoresis in Chiral Analysis*, John Wiley & Sons, 1997.

[2] Fanali, S., *J Chromatogr. A* 2000, 875, 89-122.

[3] Chankvetadze, B., Blaschke, G., *J. Chromatogr. A* 2001, 906, 309-363.

[4] Li, S., Vigh, G., *Electrophoresis* 2004, 25, 2657-2670.

[5] Galaverna, G., Corradini, R., Dossena, A., Marchelli, R., Vecchio, G., *Electrophoresis* 1997, 18, 905-911.

[6] Iványi, R.; Jicsinszky, L.; Juvancz, Z.; Roos, N.; Otta, K.; Szejtli, J. *Electrophoresis* 2004, 25, 2675-2686.