Optimization of Stationary and Mobile Phase Composition for Separation of Enantiomers using Polysaccharide Based Chiral Selectors in High-Performance Liquid Chromatography

Giorgi Jibuti, Bezhan Chankvetadze

e-mail: giorgi.jibuti271@ens.tsu.edu.ge

Department of Physical and Analytical Chemistry, School of Exact and Natural Sciences,
Tbilisi State University, Chavchavadze Ave 3, 0128 Tbilisi, Georgia

Separation of enantiomers is challenging task for modern chemistry. Despite similarity of their physical and chemical properties, physiological activity of enantiomers is quite different. That's why it is important to analyze enantiomers in products such as pharmaceuticals, food additions, and agrochemicals. It is also important to consider, that the number of single enantiomer products is growing constantly.

In achiral environment it is impossible to separate enantiomers. It is only possible to separate them in chiral environment. Most popular and widespread method for separation of enantiomers is high performance liquid chromatography (HPLC).

Nowadays hundreds of chiral selectors are described in the literature, but only few of them are commercialized and fewer remain on market. Polysaccharide based chiral selectors have number of advantages: they are applicable in combination with normal-, reversed phase and polar-organic mobile phases, enantioselectivity is high, and they are available on the market.

Despite the fact, that HPLC is most commonly used in enantioselective analysis, mechanism of separations of enantiomers is not completely clear. If this mechanism was resolved, it could help us to predict the results of experiments and develop analytical and preparative methods much faster and with least expenses.

In the present study analysis of chiral dihydropyridine derivatives on polysaccharide based chiral selectors using normal, reverse and polar-organic solvents and the effect of some additives s in mobile phase on the separation results are reported.