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PERTRACTION USING CHIRAL MEMBRANES FOR RACEMIC MIXTURE SEPARATION

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Notwithstanding the fact, that enantiomers exhibit identical properties in the achiral environment, they should be considered as different chemical compounds because of their big difference in effectiveness, pharmacological activity and pharmacokinetic profile, since the modules with which they interact in biological systems are also optically active [1,2].

Non-volatile enantiomers can be separated by pertraction. A new method for racemic mixture separation by membrane processes taking advantage of chiral polymers and chiral ionic liquids is present. The supported chiral room temperature ionic liquid membrane is used for selective separation of enantiomers.

Racemic mixture of Tryptophan - D and L enantiomers - was chosen as the model substance. During pertraction experiments the membrane was placed between the feed and receiving phase of the pertraction cell; five types of membranes with immobilizing chiral selector (0-50% diamine cyclohexane in 1,3-diamine benzene) were used.

During pertraction experiments we find out, that kinetics of the pertraction significantly influence the enantiomer resolution what indicated that facilitated transport is employed.

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Key Words: chiral membranes, racemic mixture, tryptophan, pertraction

References:

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- [2] M.R. Islam, J.G. Mahdi, I.D. Bowen, Pharmacological importance of stereochemical resolution of enantiomeric drugs, Drug safety: an international journal of medical toxicology and drug experience (1997) 17 (3): 149-65.