Electronic Supplementary Material (ESI) for Analytical Methods.

Supplementary information

Hollow fiber supported liquid phase microextraction combined with maltodextrin-modified capillary electrophoresis for determination of citalopram enantiomers in urine samples

Jafar Abolhasani[1]*, Hamid Reza Jafariyan[2], Mohammad Mahdi khataei[3], Rahim Hosseinzadeh khanmiri[1], Ebrahim Ghorbani-kalhor[1]; Akbar Hassanpour[3]

[1]*Department of Chemistry, College of Science, Tabriz Branch, Islamic Azad University, Tabriz, Iran.*

[2]*Department of Chemistry, Yazd University, G. C., P.O. Box 89195-741, yazd, I. R. Iran.*

[3]*Department of Chemistry, Marand branch, Islamic Azad University, Marand, I. R. Iran.*

Correspondence: Prof. Jafar Abolhasani, Department of Chemistry, College of Science, Tabriz Branch, Islamic Azad University, Tabriz, Iran.

Tel & Fax: +98 (44) 44431685

E-mail: Abolhasani@iaut.ac.ir (J. Abolhasani)

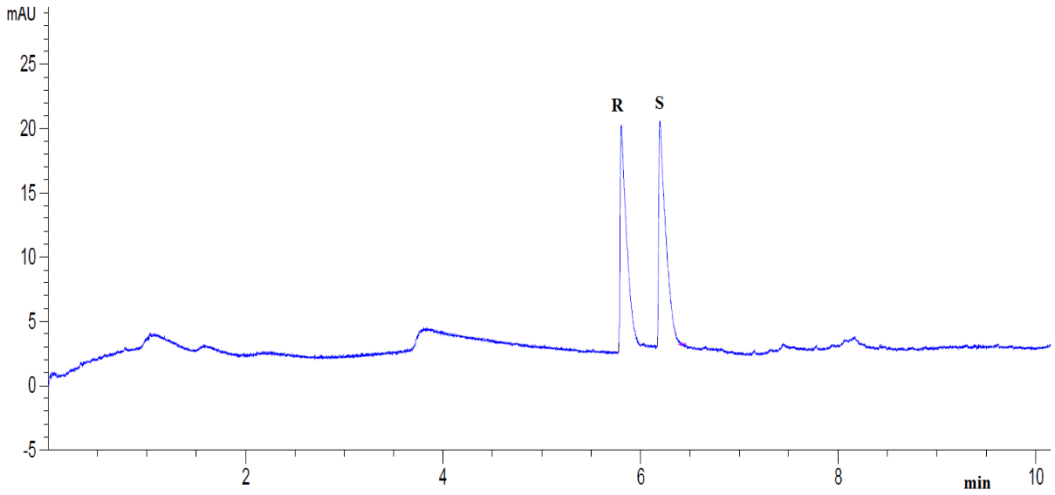

Figure 1S. Electropherogram of the chiral separation of CIT. Experimental conditions: capillary: 60 cm (50 cm effective length) 50 mm id; detection: 214 nm; applied voltage: 18 kV; temperature: 20 ^{0}C; injection: 60 mbar 5 s; separation solution: 50 mM phosphate buffer pH 5.0 containing 15.0% (w/v) MD with DE 4-7 as chiral selector.

1. Supplementary Results and discussion

1.1 Preliminary experiments for development of LPME process

Different variables can affect the extraction efficiency in the LPME procedure, are including extraction time, pH of the donor phase and acceptor phase, stirring rate, temperature, and type of organic solvent. One of the main aims of experimental methodologies is to find the optimal point for each variable by the least number of experiments. Two-level factorial fractional designs are very useful for preliminary studies or in the initial steps of an optimization due to their simplicity and relatively low cost. With 6 factors, number of required runs is 2^6 (64), whereas one of the main aims of experimental methodologies is to obtain the best operating conditions with least runs. Therefore, a strategy should be selected for reducing the number of experiments. Plackett–Burman design is such a strategy which is also a two-level design for examining effects of n parameters in $k = n+1$ runs. Nevertheless, the interactions between the factors are considered negligible in this method. Another way for the reducing the number of experiments is logical reduction of variables. As is known, stirring rate plays an essential role in increasing the kinetics and efficiency of extraction by increasing the mass transfer and reducing the thickness of double layer around SLM. Therefore, this factor can be removed from variables by selection of a proper speed (a speed that has maximum amount without bubble formation around SLM). Also, temperature is not significant factor. Therefore, this factor can also be removed from variables and room temperature was selected as suitable temperature. Investigation of composition of the SLM as a factor in experimental design not only increases the number of runs but also requires some complicated designs with more number of experiments. Study of this parameter separately can give optimum SLM as well as simplicity of experimental design method and reduction of number of runs. Hence, the SLM composition was optimized separately. By this strategy for factor selection, only three factors remained.