

ABSTRACT

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Title of Doctoral Thesis **Development of electrophoretic methods for the analysis of biologically active compounds using complex formation**

The dissertation is dealing with the development of capillary electrophoretic methods with spectrophotometric detection for the determination of biologically active substances in forensic, clinical and pharmaceutical fields.

Theoretical background to the individual experimental parts is presented in the Introduction. Basic principles of capillary electrophoresis are explained, problems of separation selectivity and sensitivity are discussed and the analytes under study are characterised.

The first experimental part is devoted to electrophoretic determination of chlorophenylpiperazine isomers (ortho, meta, para) in confiscated pills using cyclodextrins as selectors in acidic phosphate buffer.

The second experimental part is devoted to the determination of urinary 8-hydroxy-2'-deoxyguanosine (an oxidation stress biomarker) using complex formation with borate including sample pretreatment prior analysis and on-line preconcentration by sample stacking in a detection cell with long optical path.

The third part is dealing with the electrophoretic assay of citrus flavonoids (hesperidin, diosmin, rutin), troxerutin and ascorbic acid in pharmaceuticals and food supplements by using complex-forming borate buffer as the background electrolyte.

In the fourth experimental part the influence of the presence of complex forming anions (tungstate and borate) on the pre-concentration efficiency of the large volume sample stacking with polarity switching is studied on standard mixtures of flavonoids (apigenin, rutin, hyperoside, quercetin, luteolin) and phenolic acids (chlorogenic, para-coumaric, cinnamic acid).