

# ABSTRACT

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Title of the diploma thesis: Determination of creatinine in urine using on-line SPE in SIA

The aim of the diploma thesis was to determine creatinine in urine by a method whose results would be comparable to the routinely used method based on the Jaffé reaction. Three urine samples were used, the resulting values were statistically compared with the values measured on a clinical analyzer according to the Jaffé protocol.

Urine creatinine was determined by online solid phase extraction (SPE) in sequence injection analysis (SIA). The column in the SIA system was filled with sorbent for extraction, a sorbent was used in the Plexa PCX material. The standard addition method was used to determine creatinine, each sample was measured twice and the average of the given values was used for evaluation. The experimental conditions were first optimized on standard solutions in dilute acetic acid, then applied to real urine samples.

The method was evaluated for linearity, yield, repeatability and robustness. According to the value of the correlation coefficient, good linearity was achieved, yield around 100%. Repeatability was evaluated according to RSD, which was always around 2-3%, which is considered a very good result.

The resulting creatinine concentrations were calculated from the peak height (absorbance) and from the area under the peak. The values measured in our experiment were comparable with the values measured in the clinical laboratory according to the Jaffé protocol, so the aim of the work was met.

**Key words:** solid phase extraction, sequential injection analysis, creatinine in urine