DETERMINATION OF ACCURACY WHEN VALIDATING UV-SPECTROPHOTOMETRIC METHODS OF QUANTITATIVE DETERMINATION IN FORENSIC AND TOXICOLOGICAL ANALYSIS

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The purpose of this paper is to form the determination procedure and criteria for acceptability estimation of accuracy when carrying out the validation of UV-spectrophotometric methods of quantitative determination for forensic and toxicological analysis in the variant of the method of calibration curve.

The following criteria and procedure of acceptability estimation of accuracy for UV-spectrophotometric methods of analytes quantitative determination in biological fluids used in forensic and toxicological analysis have been offered:

• accuracy confirmation of the method is carried out in two directions – by model solutions (without matrix) and by matrix samples;

• verification of the method accuracy by model solutions is carried out by calculation of their concentrations using the respective linear dependence;

• estimation of the method accuracy by matrix samples is carried out at two levels – within-run and between-run – using calibration and model samples;

• determination of within-run accuracy is carried out in the way of calculating the concentrations of calibration samples for each run by individual values of absorbance using the linear dependence obtained for this run;

• determination of between-run accuracy is carried out in two stages – by calculation of the concentrations of model samples and mean concentrations of calibration samples using the linear dependence obtained by the mean values of parallel runs;

• the calculated values X_{calc}, % и X_{calc}^{model}, % are used for calculation of δ and δ^{model} respectively;

• the acceptability criteria have been offered for estimation of value δ^{model} within two approaches based on: 1) assumption of equality of the uncertainty of sample preparation procedure and the uncertainty of analyte quantitative determination in model solutions ($\delta^{model} \leq 4.52\%$); 2) assumption of insignificance of the uncertainty of analyte quantitative determination in model solutions ($\delta^{model} \leq 2,05\%$);

• it is proceeded from insignificance of systematic error for estimation of value δ ($\delta \leq 6.40\%$).