LC-MS/MS DETERMINATION OF ISONIAZID, PYRAZINAMIDE AND ETHAMBUTOL AS TOOL FOR THERAPEUTIC DRUG MONITORING

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According to the 2022 Global tuberculosis (TB) report issued by World Health Organisation, a drop in 2020 and 2021 tuberculosis detection in comparison with the pre-pandemic era might implicate global TB endeavour negatively. Assumed higher than diagnosed, the real number of patients with TB suggests higher mortality, transmission and increase in future cases. In the Slovak Republic, TB situation is stable, with a high rate of successful treatment. In drug-susceptible TB, oral forms of isoniazid, pyrazinamide, ethambutol and rifampicin piece together a first-line treatment regime. Therapeutic drug monitoring (TDM) yields positive results in the individualisation of pharmacotherapy and can enhance better treatment outcomes. Patients might benefit from plasma drug levels neither too low nor too high, so both non-response and toxicity can be eradicated, respectively. High specificity and selectivity offered using liquid chromatography coupled to tandem mass spectrometry (LC-MS/MS) over common immunoassay analysis is a stimulus for new detection methods development. Hereby, a high-throughput LC-MS/MS method for the determination of isoniazid, pyrazinamide and ethambutol in human plasma was developed and validated according to European Medicine Agency guidelines. The method was applied to TDM of patients' samples from the national TB institute in the Slovak Republic.