

## **Abstract**

In this bachelor thesis, an ultra-high-performance liquid chromatography method (UHPLC) was developed to determine rifampicin in phosphate buffer (also called PBS). Rifampicin is a bactericidal antibiotic from the rifamycin family, which plays an important role in the treatment of tuberculosis. Optimized conditions for rifampicin determination in PBS were as follows: column kinetex UHPLC C18 100 (50x2.1 mm; 1.3  $\mu\text{m}$ ), mobile phase consisted of 10 mM aqueous ammonium formate buffer (pH 3.51) to which trifluoroacetic acid was added as an ion pairing agent (to a final concentration of 0.1%) (component A) and of ACN (component B). The measurement was carried out in the gradient elution mode of the mobile phase (time: 0-1-6-7-8-11, component B: 30,30,80,80,30,30). The flow rate was 0.300 ml / min at a column temperature of 30 ° C. The injection volume was 5  $\mu\text{l}$ . Under these optimized UHPLC conditions, a calibration dependence was measured in concentration range from  $28,3 \cdot 10^{-3} \text{ mg ml}^{-1}$  to  $4,42 \cdot 10^{-4} \text{ mg ml}^{-1}$ . The limit of detection was  $1,05 \cdot 10^{-4} \text{ mg ml}^{-1}$  and the limit of quantification was  $3,5 \cdot 10^{-4} \text{ mg ml}^{-1}$ .

**Keywords:** antibiotic, rifampicin, UHPLC