Determination of Captopril in Rat Plasma by LC-MS/MS in Presence of Apigenin

Authors: Siska; Suyatna, Franciscus D; Mun’im, Abdul; Bahtiar, Anton; Priyanto

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Abstract

To determine and validate of captopril in presence of apigenin by liquid chromatography-tandem mass spectrometry (LC-MS/MS) in rat plasma. The captopril and apigenin were extracted from rat plasma by protein precipitation with acetonitrile. Sample containing captopril and apigenin were analyzed by using LC-MS/MS with C18 column Acquity® (100 mm×2.1 mm), 1.7 µm particles size column at 40 °C. The gradient system of mobile phase composition was a mixture of 0.1% formic acid and acetonitrile (60; 40 v/v), with flow rate 0.3 ml/second. Mass detection was performed on Waters Xevo Triple Quadrupole equipped with an electrospray ionization (ESI) source in positive ion mode in the multiple reaction monitoring (MRM) modes. Captopril was detected at m/z 415 > 216.16, apigenin was detected at m/z 271.13 > 153.07 and propranolol an internal standard was detected at m/z 260 > 183.17. Results: The method was validated according to EMEA guidelines which showed good reproducibility and linearity of 0.9992, the LLOQ were 10 ng/ml for captopril. The precision (%CV) value of Within-run and between-run analysis is 3.90–10.90% and 3.77–8.13% whereas the accuracy (%diff) of captopril was less than 20%. Stability studies revealed that captopril has been stable for 6 hours at room temperature, three freeze-thaw cycles, and at least 120 days at −40 °C. Conclusion: The developed LC-MS/MS method is valid to evaluate captopril in present of apigenin in vitro and meet the requirement of linearity, accuracy, selectivity, precision, matrix effect, and stability according to EMEA 2011.