Rapid Analysis of Plasma Free Metanephrines by Automated Online Solid Phase Extraction-LC/MS/MS

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ABSTRACT

A rapid, sensitive and fully automated highthroughput online solid-phase extraction-LC/MS/MS method is described. This online method enables extraction, concentration and separation of plasma free-metanephrines in a very short analysis time. This online method enables extraction, concentration and separation of plasma free-metanephrines in a very short analysis time. It also reduces the risk of human errors associated with labor intensive steps usually required by offline solid-phase extraction while maintaining sample quality and throughput.

MATERIALS AND METHODS

Sample and standards preparation

Pharmacologically active plasma free-metanephrine samples were obtained from Sigma-Aldrich at highest purity available, deuterated (d3) standards were obtained from Toronto Research. All solvents were used in LC/MS/MS analysis without any further purification. The use of SPE led to significant cleaner samples and was highly effective in decreasing interferences from a large number of endogenous and exogenous compounds present in plasma that can interfere the electrospray ionization. SPE equipment was obtained from the injection transfer cartridge and extraction recovery.

RESULTS

Comparison of extraction recovery was performed using two different SPE cartridges, in series. The first cartridge is a column containing the same sorbent, in series. The first cartridge is a column containing the same sorbent, and the amount of analyte recovered was determined by placing 2 cartridges, containing the same sorbent, in series. The second cartridge is able to trap all the injected analyte of interest, the amount of analyte that could be lost through the first, trapped onto the second cartridge.

Conclusions

Favorable recoveries were obtained for all analytes and the use of 96-well plate technology and automated LC/MS/MS data acquisition system enabled high sample throughput.

REFERENCES


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