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Development and validation of a UHPLC-tandem mass spectrometric method for the direct detection of formoterol in human urine

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Abstract

Formoterol is frequently applied therapeutically. However, since January 2012, the new WADA's rules limited the use of formoterol in sports competition establishing a threshold of 30 ng/mL. The sensitivity and selectivity of UHPLC/ESI-MS/MS has allowed quantitative and qualitative analysis by direct injection. Therefore, a direct injection method for the quantitative detection of formoterol in urine by UHPLC/ESI-MS/MS was developed and validated with the sample preparation limited to an enzymatic hydrolysis step. Chromatography was performed on a C_8-column using gradient conditions. Calibration curves were constructed between 15 and 60 ng/mL. Stability of formoterol was also investigated at 56 °C at pH 1.0, 5.2, 7.0 and 9.5. At pH values of 5.2 and 7.0 formoterol showed good stability. This work was presented as a contribution to the Manfred Donike Workshop.

The full experimental and instrumental conditions and other considerations about formoterol analysis in urine are described in Sardela V.F., Deventer K., Pereira H.M.G., Aquino Neto F.R., Van Eenoo P., (2012) Development and validation of a ultra high performance liquid chromatography-tandem mass spectrometric method for the direct detection of formoterol in human urine. *J. Pharmaceut. Biomed.* 70: 471-475, 2012.

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