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Screening of Testosterone Esters in Human Plasma

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Abstract

The detection of an intact ester of testosterone in plasma would be of great value in doping controls, giving an unequivocal proof of the administration of exogenous testosterone. In the current study, a sensitive screening method for the detection of nine testosterone esters in human plasma was developed (testosterone acetate, testosterone benzoate, testosterone cypionate, testosterone decanoate, testosterone enanthate, testosterone isocaproate, testosterone phenylpropionate, testosterone propionate and testosterone undecanoate). By preparing oxime derivatives of intact testosterone esters, the sensitivity of the assay was increased. Furthermore, the method included liquid-liquid-extraction (LLE) as sample clean-up, as well as online separation of the target analytes from the derivatisation solution. The analysis was performed by liquid chromatography (LC) coupled to tandem mass spectrometry (MS/MS). The method developed herein is simple and rapid, and was validated according to World Anti-Doping Agency (WADA) guidelines.

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