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High Resolution Full Scan Liquid Chromatography Mass Spectrometry Comprehensive Screening in Sports Antidoping Urine Analysis

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Highlights

- Screening of prohibited substances using a high-resolution full scan liquid chromatography in human urine.
- Application and validation of a high resolution LC/MS screening for small molecules with polarity switching.
- Quantitative of endogenous sulfated steroids in human urine.

Abstract

The aim of this paper is to present the development and validation of a high-resolution full scan (HR-FS) electrospray ionization (ESI) liquid chromatography coupled to quadrupole Orbitrap mass spectrometer (LC/Q/Orbitrap MS) platform for the screening of prohibited substances in human urine according to World Antidoping Agency (WADA) requirements. The method was also validated for quantitative analysis of six endogenous steroids (epitestosterone, testosterone, 5 α -dihydrotestosterone, dehydroepiandrosterone, androsterone and etiocholanolone) in their intact sulfates form. The sample preparation comprised a combination of a hydrolyzed urine liquid-liquid extraction and the dilute & shoot addition of original urine

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