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Detection of new clomiphene metabolites in human urine by liquid chromatography - quadrupole time-of-flight tandem mass spectrometry

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Abstract

Clomiphene, a selective estrogen receptor modulator, is prohibited by World Anti Doping Agency (WADA) out-of-competition and in-competition. As it is extensively metabolized, further investigation of clomiphene metabolic profile will be essential to routine anti-doping analysis. The metabolic pathway and the different metabolites of clomiphene in human urine collected from three healthy volunteers during 1 week were studied by liquid chromatography-quadrupole time-of-flight mass spectrometry (LC-QTOFMS) based on accurate mass measurement. Seven unreported metabolites were identified and characterized, and all of the newly found urinary metabolites belonged to a new metabolic pathway (hydrogenation). An approach for the metabolism study of clomiphene and its analogs by LC-QTOFMS was presented. Two metabolites, 3,4-dihydroxy-dihydro-clomiphene (m/z 440.1991) and 3,4-dihydroxy-dihydro-deethyl-clomiphene (m/z 412.1674), are the potential biomarkers for monitoring oral administration of clomiphene in doping control.

For the complete paper, please, see the following reference:

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