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Determination of sildenafil, vardenafil and tadalafil metabolites in human urine by GC/MS

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Abstract

The use of sildenafil analogues by athletes in order to increase the oxygen transport to tissues has been postulated.

A method is described for the determination in urine of phosphodiesterase type 5 enzyme inhibitors (PDE5Is) sildenafil (SDF), vardenafil (VDF), and tadalafil (TDF) and their metabolites by gas chromatography – mass spectrometry (GC-MS); the method involves liquid/liquid extraction of the analytes from urine and derivatisation to obtain trimethylsilyl derivatives. The metabolic profile was studied on real samples collected from subjects taking PDE5Is (Viagra[®], Levitra[®] or Cialis[®]). The main urinary metabolites were identified and their MS fragmentation characterized. The optimal sample pre-treatment and GC/MS conditions for the detection of the metabolites have been studied, considering also their possible introduction in routine doping analysis.

The results of the study are published in:

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