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Differentiation between the administration of the aromatase inhibitor androstatrienedione and the anabolic androgenic steroid boldenone

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Abstract

As per list of the World Anti-Doping Agency (WADA) boldenone (BOL) is explicitly listed in group S1 “anabolic androgenic steroids”, and is therefore prohibited in sports, while androsta-1,4,6-triene-3,17-dione (ATD) is classified as aromatase inhibitor (class S4. Hormone Antagonists and Modulators, particularized class S4.1. Aromatase Inhibitors). Both substances are reported to be excreted as boldenone and/or boldenone metabolite in the urine.
As class S1 substances are considered as “Non-Specified Substances” while class S4.1. substances are judged as “Specified Substances” the assignment to the administered substances is particularly important for the valuation of the adverse analytical finding. Thus, the urinary metabolism and pharmacokinetics of ATD and BOL were studied.
Following oral administration of BOL (50 mg, n=6) 17β-hydroxy-5β-androst-1-en-3-one (BM1) and 3α-hydroxy-5β-androst-1-en-17-one were detected as main metabolites besides the parent compound. Additionally lots of other phase-I metabolites together with traces of ATD were detected as metabolites. Their kinetics is monitored up-to 48 hours post-administration where urine collection unfortunately was terminated.
Following the administration of ATD (50 mg p.o., n=6) major amounts were excreted as 17β-hydroxyandrosta-1,4,6-triene-3-one and ATD. As minor metabolites BOL and other reduction products were detected. The excretion kinetics were monitored up-to 48 hours post-administration where urine collection unfortunately was terminated.
Furthermore influences on the urinary steroid profiles were monitored with revealing the strongest influences on Adiol/Bdiol and in case of Boldenone administration also on epiAdiol/epiBdiol ratio.
The details of the investigation will be published elsewhere.

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