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Mass spectral characterization of novel dehydrochloromethyltestosterone and oxandrolone metabolites after HPLC clean-up

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Abstract

The present study was aimed at detecting 18-nor-17-hydroxymethyl metabolites of oxandrolone (OXA) and dehydrochloromethyltestosterone (DHCMT) and evaluating their relevance for the doping control.

We applied the HPLC fractionation of urinary concentrate obtained after solid phase extraction to get cleaner extracts and probably deeper insight into the metabolism of OXA and DHCMT. This allowed the collection of relatively pure fractions containing 18-nor-17-hydroxymethyl metabolites of OXA and DHCMT, as well as the identification of the other metabolites of DHCMT not previously reported.

Once implemented into the GC-MS/MS screening, 18-nor-17-hydroxymethyl metabolites of OXA (17-epimers) were shown to provide much better detection window of oxandrolone administration than oxandrolone, epioxandrolone and 18-noroxandrolone. In fact, several urines reported negative by GC- and LC-MS/MS were found to contain solely 18-nor-17-hydroxymethyl metabolites of OXA.

For DHCMT, 18-nor-17-hydroxymethyl metabolite with the intact A-ring is less abundant and seems to be more subject-dependent: in some urines the other known metabolite, 4-chloro-17α-methyl-5β-androst-1-ene-3α,6,17β-triol-16-one, could be detected longer. However, some novel DHCMT metabolites were found, of which one metabolite tentatively identified as 18-nor-17β-hydroxymethyl-17α-methyl-4-chloro-5β-androst-13(14)-ene-3α-ol was shown to be the most long-term metabolite ever reported.

The details on the results of this study will be published elsewhere.