

## **Determination of growth-hormone secretagogue pralmorelin (GHRP-2) and its metabolite in human urine by means of liquid chromatography/tandem mass spectrometry**

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### *Abstract*

GHRP-2 (pralmorelin, D-Ala-D-( $\beta$ -naphthyl)-Ala-Ala-Trp-D-Phe-Lys-NH<sub>2</sub>), which belongs to a class of growth hormone secretagogue (GHS), is intravenously used to diagnose growth hormone deficiency. Because it may be misused in expectation of a growth-promoting effect by athletes, the misuse of GHS by athletes has been prohibited by the World Anti-Doping Agency (WADA). Therefore, the mass spectrometric identification of GHRP-2 and its metabolite D-Ala-D-( $\beta$ -naphthyl)-Ala-Ala-OH (AA-3) in human urine was studied using liquid chromatography/electrospray ionization tandem mass spectrometry for doping control purposes. The method consists of solid-phase extraction using stable-isotope-labeled GHRP-2 as an internal standard and subsequent ultra-performance liquid chromatography/tandem mass spectrometry, and the two target peptides were determined at urinary concentrations of 0.5–10 ng/mL. The recoveries ranged from 84 to 101%, and the assay precisions were calculated as 1.6–3.8% (intra-day) and 1.9–4.3% (inter-day). Intravenous administration of GHRP-2 in ten male volunteers was studied to demonstrate the applicability of the method. In all ten cases, unchanged GHRP-2 and its specific metabolite AA-3 were detected in urine.

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