

Disposition and Metabolic Profile of the Weak Androgen Dehydroepiandrosterone After Administration as Part of a Nutritional Supplement to Exercised Horses

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After oral administration of a nutritional supplement containing dehydroepiandrosterone (DHEA), horses are capable of producing detectable levels of testosterone, which can result in a positive regulatory finding. Authors' addresses: School of Veterinary Medicine (Arthur), K.L. Maddy Equine Analytical Chemistry Laboratory (Knych, Stanley), University of California, Davis, CA 95616; e-mail: rmarthur@ucdavis.edu. ^{*}Corresponding author; [†]presenting author. © 2013 AAEP.

1. Introduction

Dehydroepiandrosterone (DHEA) is a weak androgen as well as a precursor to the much more potent androgen, testosterone. Although DHEA is not specifically banned from administration to racehorses, the potential for metabolism to substances such as testosterone that are not permitted in racing make its presence in nutritional supplements fed to horses a regulatory concern. In the current study, we sought to describe the metabolic profile after administration of a nutritional supplement containing precursors to non-permitted androgens to exercised female horses.

2. Materials and Methods

Eight healthy, exercised adult female horses received a single administration of 15 mL of a nutritional supplement containing DHEA (500 mg total dose) and pregnenolone (500 mg total dose). Blood and urine samples were collected at time 0 and at

various times up to 48 hours after drug administration. Plasma concentrations of DHEA, testosterone, and pregnenolone as well as their sulfated conjugates were measured by means of liquid chromatography-mass spectrometry.

3. Results and Discussion

Peak plasma concentrations of DHEA, DHEA sulfate, and testosterone sulfate were 10.1 ± 8.84 ng/ml, 25.7 ± 10.2 , and 0.670 ± 1.17 , respectively. All compounds were below the limit of detection by 24 hours after supplement administration. Peak urine concentrations of DHEA and testosterone sulfate were 1947 ± 1045 ng/mL and 256 ± 163 , respectively. Both compounds remained above the limit of detection of the assay through the 48-hour time point. Results of this study warrant careful use of nutritional supplements containing androgen precursors to racehorses.

Research Abstract

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