M. Donike, S. Rauth und A.Wolansky

Reference Ranges of Urinary Endogenous Steroids Determined by Gas-Chromatography / Mass Spectrometry

Institut für Biochemie, Deutsche Sporthochschule Köln, Germany

1. Introduction

The administration of testosterone or its chemical derivatives, the anabolic androgenic steroids, may change dramatically the excretion of the urinary endogenous steroids most of them are endproducts of the steroid metabolism. In the case of application of synthetic testosterone independent of the route of administration the most prominent change in the urinary steroid profile is the increase of testosterone glucuronide [1, 2]. This observation inititated as early as 1982 [3] a study to determine the normal range for testosterone and epitestosterone concentrations as well as the testosterone/epitestosterone ratio [4].

Following the administration of the anabolic steroid metandienone to males, the androgen excretion was reduced substantially, an observation which is in accordance with the well-known feedback mechanism regulating the testosterone production by the hypothalamic-pituitary-gonadal axis [5]. With the increase of the number of dope controls in some sports in which the misuse of anabolic steroids is well-known, steroid profiles were found which were characterized by low concentrations of the endogenous urinary metabolites and often by a low androsterone/etiocholanolone ratio [6]. It is obvious that the suppression and alteration of the biosynthesis of the endogenous steroid hormones lasts longer than the analytical detectibility of the administered synthetic anabolic steroids and their metabolites. Therefore efforts were undertaken to determine reference values for the concentrations e.g. of androsterone, etiocholanolone, and ratios e.g. androsterone / etiocholanolone, androsterone / testosterone, characteristic for the steroid profile.