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$^{13}C/^{12}C$-Ratios of Endogenous Urinary Steroids from a Population of Young Elite Athletes

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Abstract

The $^{13}C/^{12}C$-ratios and concentrations of endogenous urinary steroids from a population of young elite athletes were analyzed (n=144, age 12-26 y, median age 16 y). More than 250 other physiological variables were surveyed. Amongst others, dietary composition, energy turnover, and several clinical blood parametes were recorded.

The distributions of the $^{13}C/^{12}C$-ratios were heterogenous and often showed more than one mode. The data exhibited unexpectedly large scatter. 3 male and 7 female samples fell outside at least one of the internal reference ranges for $\Delta^{13}C$-values. However, neither the corresponding steroid profiles nor any other evidence suggested presence of synthetic steroids.

Mostly, the steroid concentrations were conspicuously low. However, they exhibited a general increase with age.

Apparently, $^{13}C/^{12}C$-ratios were positively influenced by increasing proportions of fat in the diet. However, the trends were inconsitent between different compounds.

Increasing proportions of plant proteins and carbohydrates generally seemed to effect lower $^{13}C/^{12}C$-ratios. But again, the effects were largely inconsistent between different steroids.

Increasing energy availability was associated with lower $^{13}C/^{12}C$-ratios in females. Males exhibited inconsistent trends.

 ISBN 978-3-86884-039-1