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Supraphysiological growth hormone: less fat, more extracellular fluid but uncertain effects on muscles in healthy, active young adults.

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OBJECTIVES:
To study the effects on body composition after 1 month's administration of supraphysiological doses of growth hormone (GH) in healthy, active young adults with normal GH-IGF-I axis.

SUBJECTS AND METHODS:
Thirty healthy, physically active volunteers (15 men and 15 women), mean age 25.9 years (range 18-35), participated in this study, designed as a randomized, double-blind, placebo-controlled, parallel study with three groups (n = 10: five men and five women in each group). The groups comprised the following: placebo (P), GH 0.1 IU/kg/day [0.033 mg/kg/day] (GH 0.1) and GH 0.2 IU/kg/day [0.067 mg/kg/day] (GH 0.2).

RESULTS:
In the pooled group with active GH treatment (n = 20) the results showed significant increases: IGF-I increased by 134% (baseline vs. after 1 month), body weight by 2.7%, fat free mass by 5.3%, total body water by 6.5% and extracellular water (ECW) by 9.6%. Body fat decreased significantly by 6.6%. No significant change in intracellular water was detected. The observed increase in fat free mass by 5.3% was explained by the ECW increase, indicating limited anabolic effects of the supraphysiological GH doses. Changes were noticeable in both genders, although more prominent in the male subjects. Fluid retention symptoms occurred in the majority of individuals.

CONCLUSIONS:
This is, to our knowledge, the first placebo-controlled trial to show the effects of supraphysiological GH doses on body composition and IGF-I levels in physically active and healthy individuals of both genders; the results indicate limited anabolic effects of GH with these supraphysiological doses. The role of GH as an effective anabolic doping agent is questioned.

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