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## The effects of a high dosage of creatine and caffeine supplementation on the lean body mass composition of rats submitted to vertical jumping training

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### Abstract

#### Background

The influences of creatine and caffeine supplementation associated with power exercise on lean body mass (LBM) composition are not clear. The purpose of this research was to determine whether supplementation with high doses of creatine and caffeine, either solely or combined, affects the LBM composition of rats submitted to vertical jumping training.

#### Methods

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Male Wistar rats were randomly divided into 8 groups: Sedentary (S) or Exercised (E) [placebo (Pl), creatine (Cr), caffeine (Caf) or creatine plus caffeine (CrCaf)]. The supplemented groups received creatine [load: 0.430 g/kg of body weight (BW) for 7 days; and maintenance: 0.143 g/kg of BW for 35 days], caffeine (15 mg/kg of BW for 42 days) or creatine plus caffeine. The exercised groups underwent a vertical jump training regime (load: 20 - 50% of BW, 4 sets of 10 jumps interspersed with 1 min resting intervals), 5 days/wk, for 6 weeks. LBM composition was evaluated by portions of water, protein and fat in the rat carcass. Data were submitted to ANOVA followed by the Tukey post hoc test and Student's *t* test.

## Results

Exercised animals presented a lower carcass weight (10.9%;  $P = 0.01$ ), as compared to sedentary animals. However, no effect of supplementation was observed on carcass weight ( $P > 0.05$ ). There were no significant differences among the groups ( $P > 0.05$ ) for percentage of water in the carcass. The percentage of fat in the group SCr was higher than in the groups SCaf and ECr ( $P < 0.05$ ). A higher percentage of protein was observed in the groups EPl and ECaf when compared to the groups SPl and SCaf ( $P < 0.001$ ). The percentage of fat in the carcass decreased ( $P < 0.001$ ), while those of water and protein increased ( $P < 0.05$ ) in exercised animals, compared to sedentary animals. Caffeine groups presented reduced percentage of fat when compared to creatine supplemented groups ( $P < 0.05$ ).

## Conclusions

High combined doses of creatine and caffeine does not affect the LBM composition of either sedentary or exercised rats, however, caffeine supplementation alone reduces the percentage of fat. Vertical jumping training increases the percentages of water and protein and reduces the fat percentage in rats.

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