

2011 Iran
dl 1/2019

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J Trace Elem Med Biol. 2011 Jan;25(1):54-8. doi: 10.1016/j.jtemb.2010.10.001. Epub 2010 Dec 3.

Comparative effects of daily and weekly boron supplementation on plasma steroid hormones and proinflammatory cytokines.

Naghii MR¹, Mofid M, Asgari AR, Hedayati M, Daneshpour MS.

Author information

1 Sport Physiology Research Center, Baqiyatallah (a.s.) University of Medical Sciences, Tehran, Islamic Republic of Iran. naghiimr@yahoo.com

Abstract

Boron possesses widespread properties in biochemistry and nutrition. Acute supplementation with 11.6 mg of boron resulted in a significant increase in plasma boron concentration. Given such a fast bioavailability, the objective was to determine whether acute (hourly or daily), and weekly supplementation could have any significant biological effects on the steroid hormones and further on some inflammatory biomarkers. Eight healthy male volunteers attended the laboratory on three occasions (days 0, 1 and 7). On the first day (day 0), a blood sample collection at 8.00 A.M was followed by ingestion of placebo with the breakfast. On the next day (supplementation-day 1), similar procedure was followed by ingestion of a capsule containing 10mg of boron. On both occasions blood was collected every 2h for the next 6h. Subjects were requested to consume a capsule of 10mg boron every day with their breakfast, and on the day 7, the blood collection was carried out at 8.00 A.M, again. Boron in plasma increased significantly following hours and weekly consumption. Six hours supplementation showed a significant decrease on sex hormone binding globulin (SHBG), high sensitive CRP (hsCRP) and TNF- α level. After one week (in samples taken at 8.00 A.M, only), the mean plasma free testosterone increased and the mean plasma estradiol decreased significantly. Dihydrotestosterone, cortisol and vitamin D was elevated. Also, concentrations of all three inflammatory biomarkers decreased after supplementation. Of note, despite decreased proinflammatory cytokines, based on recent clinical data, this must be the first human study report to show an increase level of free testosterone after boron consumption.

PMID: 21129941 DOI: 10.1016/j.jtemb.2010.10.001

[Indexed for MEDLINE]

Publication type, MeSH terms, Substances

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