The influence of the chemical additive tartrazine on the zinc status of hyperactive children: A double-blind placebo-controlled study.


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ABSTRACT: BIOSIS COPYRIGHT: BIOL ABS. Twenty hyperactive male children were assessed for zinc status and compared with 20 age-matched controls, and a double-blind placebo-controlled study of the effect of the chemical additive tartrazine (E102) on the zinc status of 10 hyperactive males versus 10 age-matched controls is reported. Analysis of tartrazine in commercial orange beverages was performed by high performance liquid chromatography using a reverse-phase ion-pair system. The influence of tartrazine upon zinc status of blood sera, washed scalp hair, urine, saliva and fingernails of hyperactive and control children is assessed. Zinc measurements were undertaken by inductively-coupled plasma-source mass spectrometry (ICP-MS). The tartrazine content of various commercial orange beverages ranged from 0.58-4.16 mug ml-1. Low zinc status is associated with the hyperactive compared with control for urine (p < 0.001), scalp hair (p < 0.001), serum (p < 0.01), 24-hour urine (p < 0.01) and fingernails (p < 0.01). Saliva showed no statistically significant difference. Tartrazine induces a reduction in serum and saliva zinc concentrations and an increase in urinary zinc content with a corresponding deterioration in behaviour/emotional responses of the hyperactive children but not the controls.

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