

# Abstract

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## Potential effects of zinc on information processing in boys with attention deficit hyperactivity disorder.

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**PURPOSE:** The aims of the present study were to investigate the relationship between plasma zinc levels and amplitudes and latencies of P1, N2, and P3 in parietal and frontal areas in children with ADHD, and to compare these zinc levels and event-related potentials (ERPs) indices with controls.

**METHODS:** 28 boys with ADHD were divided into two groups according to plasma zinc levels: low zinc group (N=13, zinc level <80 microg/dL) and zinc non-deficient group (N=15, zinc level >or=80 microg/dL). ERP indices from parietal and frontal brain regions were recorded in children with ADHD and in 24 normal boys by using an auditory oddball paradigm. Plasma zinc levels were measured by an atomic absorption spectrophotometer.

**RESULTS:** The plasma zinc levels were significantly lower in both ADHD groups (means are 65.8 microg/dL in low zinc group and 89.5 microg/dL in zinc non-deficient group) than controls (mean: 107.8 microg/dL; both p values <0.017). In ADHD compared to controls, the amplitudes of P3 in frontal and parietal regions were significantly lower, and the latency of P3 in parietal region was significantly longer (all p values <0.017). In low zinc ADHD group compared to zinc non-deficient ADHD group, the latencies of N2 in frontal and parietal region were significantly shorter (all p values <0.017). In addition, there was a medium but significant positive correlation between plasma zinc levels and amplitude and latency of frontal N2 wave in ADHD.

**CONCLUSIONS:** These results can suggest that plasma zinc levels might have an effect on information processing in ADHD children, and lower zinc levels seem to affect N2 wave. Since N2 wave changes may reflect a different inhibition process, further studies are warranted to investigate the effect of zinc on inhibitory process in children with ADHD, and in low zinc and non-deficient ADHD groups.

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