Analysis of serum zinc and copper concentrations in hair loss patients

Department of Dermatology, Kangdong Sacred Heart Hospital

Soo Jung Shin, Chang Sun Yoo, Min Seong Kil, Ju Hyuk Park, Chul Woo Kim, Sang Seok Kim

It is well known that some trace elements such as zinc and copper play a significant role in many forms of hair loss. However, the effect of zinc and copper in the pathogenesis of hair loss is not still unknown. The purpose of our study is to evaluate zinc and copper status in depending on each of four types of hair loss. A cross-sectional study was carried out in 30 health controls and 312 patients who were diagnosed with alopecia areata, female pattern hair loss, male pattern hair loss, and telogen effluvium. Zinc and copper serum concentrations were evaluated before meals. Serum zinc concentrations significantly differed in all four types of hair loss patient comparison with controls (Controls: 97.94ug/dL vs. alopecia areata: 84.96 ug/dL p=0.01, female pattern hair loss: 79.61ug/dL P=0.001, male pattern hair loss: 87.74ug/dL p=0.026, and telogen effluvium: 84.65ug/dL p=0.026 respectively). However, the differences of serum copper concentrations between controls and all four types of hair loss patients were statistically insignificant. (Controls: 96.29ug/dL vs. alopecia areata: 98.11ug/dL p=0.739, female pattern hair loss: 104.07ug/dL P=0.212, male pattern hair loss: 86.75ug/dL p=0.094, and telogen effluvium: 99.61ug/dL p=0.667 respectively). These data led us to hypothesize a key role of zinc metabolism disturbances in hair loss, whereas the effect of copper on hair growth and shedding cycles still need more study.

Key Words: Zinc, Copper, Hair loss