

NMA/AGSM/2022/BCS/011 - Serum Levels of Zinc and Copper in the Elderly in Owerri Metropolis

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Abstract

Background: Age is the total length of time or period of existence of an organism. Ageing is associated with a decline in daily activities including intellectual and socioeconomic responsibilities. The elderly contribute to socioeconomic development yet insufficient attention is devoted to research on their health, yet this stage of life is associated with many chronic diseases, which are in part attributed to free radical damage. We measured serum levels of the antioxidant trace elements zinc and copper in the elderly in Owerri metropolis, determined their reference values, evaluated gender differences, and correlated serum levels with age, blood pressure and body mass index (BMI). Determination of the reference values of the elements in the elderly is yet to be reported in Nigeria.

Methodology: We collected fasting blood samples of 201 apparently healthy participants aged 60 – 102 years and estimated for serum zinc and copper using atomic absorption spectrophotometry. BMI and blood pressure were measured.

Results: The mean values (\pm standard deviation) for serum zinc and copper were 3.37 ± 0.21 $\mu\text{mol/L}$ and 3.49 ± 0.24 $\mu\text{mol/L}$ respectively. There were no gender significant differences ($p > 0.05$). The reference values were 3.0 – 3.8 $\mu\text{mol/L}$ and 3.0 – 4.0 $\mu\text{mol/L}$ respectively. Copper correlated positively with BMI while zinc correlated negatively. Both trace elements correlated negatively with blood pressure and age.

Conclusion: Serum zinc and copper do not vary with gender but correlate negatively with age and blood pressure. Copper correlated positively with body mass index (BMI) unlike zinc.

Keywords: Elderly; Zinc; Copper; Reference Values.

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