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Title: Serum trace element alteration in patients with non-alcoholic fatty liver disease: an evidence from cross- sectional study

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Objectives: Trace elements play an essential role in metabolic functions of the liver; however, their levels get altered during pathophysiological states. In this study, we aimed to evaluate and compare serum levels of selective trace elements, namely, Copper, Iron, Magnesium, Manganese, and Zinc, between the non-alcoholic fatty liver disease (NAFLD) patients and healthy volunteers.

Methods: A cross sectional study was conducted by enrolling NAFLD patients (n=170) and apparently healthy volunteers (n=62). Inductively coupled plasma- atomic emission spectrometry (ICP-AES) was used to quantify the serum levels of selected trace elements. We also measured serum levels of Tumor necrosis factor (TNF–α) and malondialdehyde (MDA) to investigate the effect of NAFLD progression on trace elements.

Results: In NAFLD patients, serum Copper levels [88.5 (38.1, 286.7) µg/dL] were higher than healthy volunteers [74.9 (25.5, 148.8) µg/dL] with p value <0.001. In contrast, Zinc levels were lower in NAFLD group [107.3 (12, 270.6) µg/dL] as compared to health volunteers [125 (88.7, 261.1) µg/dL] with p value <0.001. Likewise, In the NAFLD patients, Iron, Magnesium, and Manganese levels were also lower than healthy volunteers with p value <0.001. Furtherment–α and MDA levels were significantly higher in the NAFLD group as compared to healthy volunteers.

Conclusions: The NAFLD patients had significantly altered serum trace element profile as compared to healthy volunteers, suggesting the role of trace elements in the pathogenesis of NAFLD. Hence, a trace element-based intervention can have a potential therapeutic role in the management of the NAFLD.

Biography

I completed my post-graduation (master's in medical pharmacology) at the age of 25 years from All India Institute of Medical Sciences, New Delhi, India which is a premier medical institute in the country. I have published 6 papers in reputed journals. 3 other manuscripts are communicated to reputed international journals. Currently, I am pursuing Doctor of Philosophy in Pharmacology from the same institute. I am working on animal models of Non-Alcoholic Fatty Liver Disease. I have an experience of animal handling and surgery, cryosectioning and histopathological staining, performing ELISA, working with ICP- AES, performing western blotting and real time PCR.