

EVALUATING THE SUITABILITY OF THE HUMAN TOENAIL AS A BIOMONITOR FOR  
MANGANESE STATUS: The *One Source* Cohort

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ABSTRACT

Numerous studies have demonstrated that the human toenail is a reliable biomonitor for the intake of Se and other elements. The objective of this study was to evaluate the hypothesis that Mn intake is reflected in toenail Mn levels. Interest in the status of Mn, a necessary trace nutrient which may also have toxic effects upon overexposure, stems from two recent developments: first, a greater awareness of the role of Mn-based enzymes in human health, and second, a renewed controversy over the use of a Mn-containing gasoline additive in Canada. In order to evaluate the hypothesis, toenail specimens from One Source™ multivitamin users and matched controls were selected. Using the NAA technique, Se was measured using established methods, and then Mn was measured via a new procedure. The Se results confirmed the accurate classification of the cohort. However, the nail did not demonstrate significant, positive response to Mn supplementation. Several explanations for this lack of response may be offered, including the confounding effect of other, unknown dietary variables; Mn blood level regulation by homeostatic mechanisms; and the masking of endogenous Mn in the toenail by persistent exogenous material.