

THE USE OF STABLE ISOTOPE TRACERS TO EXPLORATE ZINC AND SELENIUM METABOLISM IN INSULIN DEPENDANT PATIENTS

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Both severe and mild zinc and selenium deficiency states may occur in diabetic patients. There is however a need for improved techniques to assess these trace element status in this population. Isotopic techniques may provide an answer to this problem but the available radioactive isotopes are unsuitable for use in man. So despite the difficulties linked to their measurement, the utilization of stable isotope could provide interesting data concerning trace element status and bioavailability in diabetic patients. The question arises to the choice of a tracer technique available in a clinical situation. The measurement of bioavailability is possible using two different isotopes (for instance ⁷⁰Zn IV and ⁶⁷Zn orally). This method can provide interesting informations about the absorption, the retention and the elimination of trace elements and the interaction between trace elements. In practical, it is difficult to use it in patients especially if they are not hospitalized because of the difficulties to collect urinary and fecal samples for several days.

The other method is to study the pools that exchange rapidly with plasma as it is the more important for physiological functions and can provide information about the total pool of a trace element. This method has the advantage to be suitable for study in polypathological patients as it requires a single injection of the isotopes followed by several blood sampling. Therefore we propose to describe this technique and to report the results we obtained in 6 diabetic patients compared to 6 controls, concerning the decay curve, the half life and the clearance of zinc and selenium. This clinical trial could give original informations concerning the suitability of the isotopic pool measurement in clinical situations. Moreover these data are of interest as they provide new informations concerning trace element metabolic specificities in insulin dependant diabetic patients, which is necessary to evaluate their real need in zinc and selenium intake.