1. Selenium in Plasma

Introduction

Selenium levels in South Island soils are particularly low and regular supplementation of livestock occurs to prevent deficiency symptoms, such as white muscle disease and failure to thrive. Similarly, humans living in this area have low plasma selenium levels by world standards, although obvious deficiency has only rarely been reported in New Zealand. Selenium is an important component of glutathione peroxidase and is thus implicated in defences against oxidative damage. Selenium deficiency has been implicated in the development of cot death, cardiovascular disease, including heart failure and coronary artery disease, and cancers.

Severe selenium deficiency results in Keshan disease (heart failure) in several provinces of China but has now been eradicated by supplementation of the population. Finland, also, has adopted a policy of national selenium supplementation. Deficiency may be particularly severe in the new-born.

Interpretation

Normal reference range 0.45-1.40 µmol/l
(Christchurch population 1992)

These levels increased dramatically prior to 1992 as a result of increases in the amount of imported grain used to make flour.

Plasma selenium levels reflect recent ingestion of selenium and are a good indicator of acute and chronic poisoning. During deficiency plasma selenium levels generally reflect plasma glutathione peroxidase levels but at higher concentrations this relationship is lost.

Red cell selenium levels can also be measured and may provide a better indication of long term selenium status.