

SERUM SILICON CONCENTRATION OF HEALTHY PERSONS IN THE ANTWERP REGION (BELGIUM)

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In 1972, Carlisle and Schwartz claimed silicon to be an essential element for the chick and rat. They attributed an important role to the element in bone mineralization and soft tissue development. However, till now, no one was able to prove its essentiality for man. Analytical problems due to the very low concentrations in the human body and absence of biological certified standard reference material hampered the assessment. Evaluation of silicon status and determination of reference values, certainly is a major contribution to future research on deficiency, toxicity or essentiality of silicon for man.

Therefore in this study normal values for silicon in human serum are determined, since no such data exist for Belgium. In two hospitals in the Antwerp region blood samples were taken, after informed consent, from healthy children and adults. Patients suffering from chronic kidney diseases, lung fibrosis, senile or Alzheimer dementia, osteoporosis or atherosclerosis were excluded. For each subject age, sex, dietary habits, intake of food supplements and reason of visit to the clinic was recorded. At least thirty samples were collected for every age-class: 0–12 months, 1–3, 4–7, 8–10, 10–18, 19–39, 40–60 years and +60. Only in the adults classes (19–60 years) a subdivision for sex was made. Optimal conditions for blood prelevation, serum storage and silicon analysis had been evaluated earlier. Blood samples were drawn with a Monovette[®] syringe and needle to avoid silicon contamination. Serum samples could be stored at -20°C prior to analysis. The silicon concentration was determined with an optimized electrothermal atomic absorption spectrometric technique (4,100 ZL, Perkin Elmer, Norwalk). The results of these analyses will be presented.