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**A review of: “The Elemental Composition of Human Tissues and Body Fluids. A Compilation of Values for Adults. G. V. Lyengar, W. E. Kollmer, H. J. M. Brown. Verlag Chemie Weinheim, New York 1978, 151 pages, price DM 58,-”**

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## Book Review

THE ELEMENTAL COMPOSITION OF HUMAN TISSUES AND BODY FLUIDS. A Compilation of Values for Adults. G. V. Lyengar, W. E. Kollmer, H. J. M. Brown. Verlag Chemie Weinheim, New York 1978, 151 pages, price DM 58,-

The minor elements constituting the body and body fluids of man may be divided into essential and non-essential elements. Essential elements are e.g. Ca, Cl, Co, Fe, Mg, Mn, Mo, Na, P, S, Se, Zn. The insufficient intake of an essential element in man may lead to a deficiency or to specific diseases. Diseases like alcoholism, anaemia, chemical sense disorders, congenital defects, dental caries, delayed wound-healing, diabetes, goitre, growth stunting, neurological disorders, protein malnutrition, rickets, sexual infantilism and skin diseases are reported to be somehow—and to some extent—linked to deficiencies of certain essential elements.

On the other hand non-essential, toxic elements like Ag, Be, Cd, Hg, Pb, Sn are pollutants in the environment with sometimes hazardous health effects. By food, by air (breathing and smoking), drinking water, dust etc. these elements enter the human body, are distributed among the organs and are excreted (sometimes to a certain extent: Cd!). Generally, in cases of intoxication blood samples are analysed on such elements, but in many cases the analysis of a specific organ—if this would practically be possible—should be more appropriate. Some heavy metals accumulate in certain organs in a specific way: Hg in the brain, Cd in the kidney, Pb in bone tissue. High levels of such elements in organs and in hair, nails, sweat or placenta therefore may give valuable information concerning the actual exposure of the individual. Recently, many specialists in this field advocate the necessity of a biological monitoring in the general population for some of the most toxic elements.

In both cases viz. of essential and non-essential elements it is then necessary to know the normal levels of these elements in the various organs and body fluids of man.

In many papers in various scientific journals on medicine, biology, analytical and environmental chemistry and toxicology numerous data are provided with regard to the normal range of concentrations of an element in a specific organ. Good knowledge concerning such normal background

values is necessary in toxicology, pharmacology etc. In recent years reliable analytical techniques were elaborated for the determination of these elements. Especially neutron activation, atomic absorption, spectrometry, mass spectrometry, X-ray fluorescence spectrometry and radioactive counting methods are applied in this field. A tremendous amount of such data, comprising as much as 78 elements (in case of blood) in 57 human organs or body fluids, have been compiled by Lyengar, Kollmer and Brown. This work will prove to be extremely useful for analytical and clinical chemists, environmentalists, physicians, pharmacologists and other workers in related fields.

J. H. J. COPIUS PEEREBOOM-STEGEMAN  
J. W. COPIUS PEEREBOOM

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