

Short Communication

Pakistan J. Sci. Ind. Res., Vol. 31, No. 1, January 1988

CHROMIUM IN DIABETES AND IN CARDIOLOGY

S. Mahdihassan

SD. 34, Block A, North Nazimabad, Karachi

(Received December 20, 1987)

The science of nutrition, as it has developed upto the present may be divided into three divisions. The first investigation established that protein is essential in the food we consume and this is best implied in the term "balanced food". Moreover the protein itself must be of proper quality containing all the amino acids essential to the human body. Following research on proteins came the discovery of vitamins, which again must be present in our food to keep the body normal and healthy. Thirdly came the importance of some minerals which are as essential as the vitamins. Even the early physicians had realized that for blood formation iron is somehow indispensable. Modern scientists could easily confirm it. This turned attention to other minerals, like copper, zinc and chromium. Among these multi-minerals, the latest appears to be chromium. The scientist who has done most to show the importance of chromium is W. Mertz [1] whose work has been duly extolled by Schroeder [2]. The presence of chromium in metabolizing glucose has been considered important enough to look upon it as "Glucose tolerance factor" — a tenu used by Mertz [1]. When this function is attributed to chromium two facts in human pathology can be explained.

Schroeder [2] informs that, "in the shortage of chromium there finally appear signs of mild diabetes, in that a test of blood sugar is normal in the fasting state but elevated abnormally after a breakfast of sugar." Moreover "fats and fatty substances of which cholestrol is the most popular are increased above normal levels". Once there is increased blood cholestrol several symptoms resulting from it are well known to clinicians.

Schroeder writes that "in 1959 K. Schwarz and Walter Mertz (found) in rats a reduced tolerance to glucose or mild diabetes, which they found was due to deficient

chromium" — "Later Mertz showed conclusively that chromium was necessary for the utilization of insulin in glucose metabolism, a deficiency of available chromium or a deficiency of insulin had similar effects; an excess of insulin without chromium or an excess of chromium without insulin gave like results, that in none" We now turn to cardiology. "Hardening of the arteries is a common disease of civilized man. With their narrowing results reduced flow of blood. The surface of the artery may break down leading to a clot when healing results with deposits of calcium. The largest artery, the aorta, is normally elastic, which may become rigid giving rise to bony plaques rupture."

Probably due to such conditions cases occur of "heart-failure". Schroeder further writes that "we found chromium in aorta was not detected being too low to be found, in almost every *person dying of coronary artery disease*, . . . and present in almost every aorta of persons dying accidentally". Thus both in diabetes and in coronary diseases chromium would appear to be essential which is best appreciation as "Glucose tolerance factor". The quotations above are abbreviated. As extra reading a monograph published by WHO [3] may also be consulted.

Key words : Chromium, Diabetes, Cardiology

REFERENCES

1. W. Mertz, *Biological Trace Elements Research*, **1**, 259 (1979).
2. H. Schroeder, *Trace Elements and Nutrition* (1976).
3. *Trace Elements in Human Nutrition*, Technical Report Series 532 WHO Geneva..