

**SERUM MAGNESIUM, ZINC, MANGANESE AND COPPER IN CORONARY
HEART DISEASE - A PILOT STUDY**

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The significance of certain trace elements in the pathogenesis of coronary atherosclerosis has gained substantial interest during the past decade. We reported higher levels of magnesium, manganese and zinc in atherosclerotic plaques compared to normal arterial tissue (Mendis 1988). In the present study we have investigated the serum concentrations of magnesium (Mg), zinc (Zn), manganese (Mn), and copper (Cu) in 42 coronary heart disease patients (24 patients with myocardial infarction and 18 patients with ischaemic heart disease), and 24 age matched controls.

Serum zinc and magnesium levels were analysed using atomic absorption spectrometry with a Shimadzu AA 670 atomic absorption spectrophotometer. Serum manganese and copper levels were analysed using inductively coupled plasma spectrometry with a Shimadzu 1000 II inductively coupled plasma spectrophotometer.

The mean (SD) serum concentration of Mn, Cu, Zn and Mg in the control group were 16.460 (SD 6.8404) μ mol/l, 18.905 (SD 5.4533) μ mol/l, 11.383 (SD 4.8641) μ mol/l, and 110.455 (SD 87.850) μ mol/l, respectively. In patients the mean (SD) serum concentration of Mn, Cu, Zn and Mg were 12.658 (SD 4.829) μ mol/l, 17.624 (SD 4.0935) μ mol/l, 11.350 (SD 3.6371) μ mol/l, 77.049 (SD 200.28) μ mol/l, respectively.

The serum concentration of Mn was significantly lower in CHD patients compared to controls. The serum concentration of Mg, Cu and Zn were comparable in the two groups. It is possible that certain trace elements are redistributed when there is myocardial ischaemia and the uptake of these elements (from the serum pool) by the heart may be essential for the maintenance of proper myocardial integrity and function.

References: 1. Mendis S. (1988), Magnesium, zinc and manganese in atherosclerosis of the aorta. Biological Trace elements Research 22(3): 251-253.