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Metabolism of magnesium in health and disease

S K Ahsan ¹

Affiliations

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Abstract

Magnesium (Mg) is an intracellular cation. It is an essential element which catalyses more than 300 enzymatic reactions, in particular those involving ATP. Approximately half of the total Mg in the body is present intracellularly in soft tissues, and the other half is present in bone. Serum Mg determination represents only 1% of total body's Mg concentration. Modern instruments will soon be available to determine physiologically active intracellular ionised Mg. Despite the ubiquitous nature of Mg, low serum Mg occurs either from decreased absorption or due to increased excretion. Hypomagnesaemia is surprisingly common in hospital populations and is more prevalent in acute than in chronic cases but often remains undetected or overlooked. Magnesium deficiency may result in hypokalaemia and hypocalcaemia. Myocardial Mg depletion may result in influx of Na⁺ and Ca⁺² into the mitochondria which may lead to myocardial cell death. Hence, low Mg concentration may be a factor for a wide variety of clinical conditions.

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