Magnesium metabolism. A review with special reference to the relationship between intracellular content and serum levels.

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BACKGROUND: Magnesium (Mg++) is a ubiquitous element in nature, playing a role in photosynthesis and many metabolic functions in humans. All enzymatic reactions that involve adenosine triphosphate have an absolute requirement for Mg++. Levels of Mg++ are controlled by the kidneys and gastrointestinal tract and appear closely linked to calcium, potassium, and sodium metabolism.

DISCUSSION: The clinical manifestations and causes of abnormal Mg++ status are protean. Testing for altered Mg++ homeostasis is problematic. Serum levels, which are those generally measured, reflect only a small part of the total body content of Mg++. The intracellular content can be low, despite normal serum levels in a person with clinical Mg++ deficiency.

SUMMARY: Future directions in research related to intracellular content of Mg++ are discussed. Treatment of altered Mg++ status depends on the clinical setting and may include the addition of a potassium/Mg++-sparing drug to an existing diuretic regimen. Guidelines for therapy are given.

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