

# Abstract

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## Effect of various clinical variables on total intracellular magnesium in hospitalized normomagnesemic diabetic patients before discharge.

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**BACKGROUND:** Deficiency of intracellular magnesium (icMg) may coexist with normal serum Mg levels. Little is known about clinical and pharmacological factors affecting icMg in normomagnesemic patients with diabetes mellitus (DM). Moreover, no information exists regarding the icMg state in diabetic patients after acute illness and before hospital discharge.

**METHODS:** We have evaluated the effect of antihyperglycemic medications and other relevant clinical variables on icMg in 119 such patients. Total icMg was measured in peripheral blood mononuclear cells. Twenty healthy volunteers served as controls.

**RESULTS:** icMg content (microg/mg cell protein) was lower in DM compared to controls (1.74 +/- 0.44 vs 2.4 +/- 0.39,  $p < 0.001$ ). It was also significantly lower in patients treated with insulin (1.57 +/- 0.31 vs 1.8 +/- 0.46,  $p = 0.01$ ), while metformin treatment was associated with higher icMg (1.86 +/- 0.49 vs 1.63 +/- 0.35,  $p = 0.003$ ). After adjustment for age, gender, and concomitant use of other hypoglycemic drugs, only treatment with metformin was independently associated with increased icMg ( $p = 0.03$ ). No statistically significant association or correlation was found between icMg content and age, causes of hospitalization, comorbid conditions, treatment with other drugs, concentrations of HbA1c, serum glucose, Mg, or creatinine.

**CONCLUSION:** In conclusion, icMg is depleted in normomagnesemic DM patients. Insulin treatment is associated with worsening of icMg status, while metformin treatment may confer protective effect.

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