

**The administration of IV infusion of MgSO<sub>4</sub> (4 g/100 mL) in 5% dextrose over a 4-hour treatment period poses no significant deleterious effects on cardiovascular, liver, kidney, or metabolic function” Karhu et al (2018).**

Abstract:

**BACKGROUND:** Magnesium (Mg) deficiency contributes to the pathophysiology of numerous diseases. The therapeutic use of Mg has steadily increased over time. The increased in-hospital use of intravenous (IV) magnesium sulfate (MgSO<sub>4</sub>) warrants more extensive investigation regarding the safety of the therapy. The aim of this study was to determine the safety of IV MgSO<sub>4</sub> infusion on cardiovascular, liver, kidney, and metabolic markers in adults.

**METHODS:** Twelve volunteers were randomized to one of two cross-over conditions: (a) IV infusion of MgSO<sub>4</sub> in 5% dextrose followed by IV infusion of 5% dextrose 1 week later or (b) IV infusion of 5% dextrose followed by IV infusion of MgSO<sub>4</sub> in 5% dextrose 1 week later. An electrocardiogram was recorded continuously during the infusions. Blood was drawn pre- and post-infusion for blood count (high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, and triglycerides). **Results:** Serum Mg increased from pre- to post-infusion in the MgSO<sub>4</sub> + 5% dextrose group ( $p < 0.0001$ ). The QRS interval length increased from pre- to post-infusion in the MgSO<sub>4</sub> + 5% dextrose group ( $p < 0.04$ ). Additionally, serum glucose concentration increased in the MgSO<sub>4</sub> + 5% dextrose group ( $p = 0.04$ ). These significant findings were modeled with gender and age as covariates. No other significant differences were found. **CONCLUSIONS:** The administration of IV infusion of MgSO<sub>4</sub> (4 g/100 mL) in 5% dextrose over a 4-hour treatment period poses no significant deleterious effects on cardiovascular, liver, kidney, or metabolic function. **RELEVANCE FOR PATIENTS:** IV infusion of MgSO<sub>4</sub> may be used for certain treatment indications without significant concern for systemic or organ toxicity.

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Reference:

Karhu, E., Atlas, S.E., Gao, J., Mehdi, S.A., Musselman, D., Goldberg, S., Woolger, J.M., Corredor, R., Abbas, M.H., Arosemena, L., Caccamo, S., Farooqi, A., Konefal, J., Lantigua, L., Padilla, V., Rasul, A., Tiozzo, E., Higuera, O.L., Fiallo, A. and Lewis, J.E. (2018) Intravenous infusion of magnesium sulfate is not associated with cardiovascular, liver, kidney, and metabolic toxicity in adults. *Journal of Clinical and Translational Research*. 4(1), p.47-55. eCollection 2018 May 28.