

Type of magnesium salt and formulation solubility determines bioavailability of magnesium food supplements

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ABSTRACT: Magnesium (Mg²⁺), an essential mineral and cofactor of more than 300 enzymatic processes, has a regulating role in energy metabolism, protein synthesis, muscle and nerve function, blood glucose and blood pressure control.(1) EFSA proposes an Adequate Intake of 350 and 300 mg/day for men and women, respectively.(2) Given deficiencies present in over 50% of the normal population, magnesium is currently a popular nutritional supplement.(3) Based on the source of elemental magnesium, the supplements currently available on the market can be divided into 2 different categories: inorganic or organic salts of magnesium. Inorganic magnesium compounds are generally perceived as not as easily absorbable as organic magnesium compounds. The aim of this study was to compare the efficacy of magnesium glycerophosphate and magnesium bisglycinate

with different magnesium formulations previously tested by specific in vitro approaches that proved to provide a valid methodology to predict in vivo outcomes and effectiveness of magnesium supplements.(4) Both in fasted and fed state the in vitro bioaccessibility, being a measure for the solubilization of the formulation during gastric incubation, was clearly higher for the organic salts of interest. Nevertheless it should be noted that poor solubility of a magnesium supplement, translating into poor dissolution, was a determining factor in bioaccessibility. Also in in vitro bioavailability, representing the absorption efficiency in the small intestine, the bisglycinate and glycerophosphate salts outperformed the inorganic magnesium oxide. Therefore we conclude that magnesium glycerophosphate and bisglycinate have a higher bioavailability compared to inorganic salts, when formulated in a highly soluble magnesium supplement. .

Biography:-

An-Katrien Vynckier graduated as an Industrial Pharmacist at the University of Leuven and obtained her PhD in Pharmaceutical Technology at the University of Ghent. She held several positions at Johnson and Johnson, Janssen Pharmaceutica and AmatsiSEPS. Currently she is R&D and Scientific Business Development Manager at Metagenics Europe. .

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