

Importance and safety of magnesium supplementation in pregnancy. To supplement or not?

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Magnesium (Mg^{2+}) is an essential mineral that participates in different and important biochemical reactions in the maternal body and in the foetus. Magnesium deficiency during pregnancy should not be underestimated. Requirements for magnesium are increased during pregnancy. The hypomagnesaemia observed in animal models provides the ability to evaluate to what extent the deficiency can influence human offspring later in life. This article summarizes the importance of magnesium in pregnancy, changes in magnesium pharmacokinetics, and consequences of maternal and foetal magnesium deficiency. The article aims to answer whether it is necessary to supplement with magnesium during pregnancy and, if so, to what extent.

Key words: magnesium, pregnancy, hypomagnesaemia, maternal magnesium deficiency, foetal hypomagnesaemia.

Význam a bezpečnosť suplementácie magnéziom v období tehotenstva. Suplementovať alebo nie?

Magnézium (Mg^{2+}) je esenciálny minerál, ktorý sa podieľa na rôznych dôležitých biochemických reakciách v tele matky a plodu. Magnéziová deficiencia v tehotenstve by nemala byť podceňovaná. Počas tehotenstva sú zvýšené požiadavky na príjem magnézia. Hypomagneziémia pozorovaná na zvieracích modeloch umožňuje vyhodnotiť, do akej miery môže nedostatok magnézia ovplyvniť zdravie plodu u ľudí neskoršie v živote. Tento článok sumarizuje dôležitosť magnézia v tehotenstve, zmeny vo farmakokinetike magnézia a dôsledky magnéziovej deficiencie u matky a plodu. Cieľom článku je zodpovedať otázku, či je v tehotenstve potrebná suplementácia magnéziom a ak áno, v akom rozsahu.

Kľúčové slová: magnézium, tehotenstvo, hypomagneziémia, deficiencia magnézia u matky, fetálna hypomagneziémia.

Introduction

Magnesium is an essential mineral and, during pregnancy, there is an increased need for magnesium; however, the intake tends to be lower than the recommended daily dose (1, 2). The maternal serum magnesium values during trimesters may fluctuate slightly, with a slightly more significant change observed when approaching the third trimester (3). Serum magnesium levels in the sequence of trimesters slowly decrease, but increase after labour (4). Generally, in most of the population,

magnesium is stored in the bones, muscles, and non-muscular soft tissue (5), and the same can be applied to the maternal pregnant body. According to animal data, the foetus is fully dependent on the provision of minerals (6). In human observations, foetal magnesium is received from maternal source by placental transport (7). Some magnesium-rich foods can be beneficial for providing a higher supply of magnesium (8). Moreover, magnesium supplementation during pregnancy may have perinatal benefits (9). A study conducted between

DECLARATIONS:

Declaration of originality:

The manuscript is original and has not been published or submitted elsewhere.

Ethical principles compliance:

The authors attest that their study was approved by the local Ethical Committee and is in compliance with human studies and animal welfare regulations of the authors' institutions as well as with the World Medical Association Declaration of Helsinki on Ethical Principles for Medical Research Involving Human Subjects adopted by the 18th WMA General Assembly in Helsinki, Finland, in June 1964, with subsequent amendments, as well as with the ICMJE Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals, updated in December 2018, including patient consent where appropriate.

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