Magnesium

see also Magnesium sulfate.

The rationale for trialing magnesium for neuroprotection following cerebral ischemia has been based both on its role in maintaining brain tissue homeostasis and on its known cellular actions that are likely to counteract damaging ischemic processes. A number of studies using animal models of cerebral ischemia, seizure, perinatal hypoxia-ischemia, subarachnoid hemorrhage and traumatic brain injury have reported positive outcomes with magnesium therapy. However, scrutiny of the animal cerebral ischemia data shows that about 46% of studies have not shown a neuroprotective effect. Furthermore, the IMAGES clinical trial found magnesium to be largely ineffective in treating strokes.

In a review, Meloni et al., present the majority of published cerebral ischemia animal studies (focal and global) that have used magnesium as a neuroprotective therapy, and discuss the possible reasons for the inconsistent results. The examination suggests that, in the majority of experiments, post-ischemic hypothermia has probably been a confounding factor in producing the positive outcomes. In addition, experimental design has not always been appropriate with respect to magnesium dosage, and to the time and route of magnesium administration. Moreover, data from the own laboratory indicates that magnesium is only neuroprotective when combined with post-ischemic hypothermia. Finally, additional information regarding the efficacy of magnesium as a stroke treatment will be available on completion of the FAST- Mag trial, but in the meantime the neuroprotective potential of magnesium should be explored when combined with post-ischemic hypothermia, and potentially with other agents, in cerebral ischemia models [1].

Serum magnesium levels had no significant association on lung cancer risk [2].

1)
Meloni BP, Campbell K, Knuckey NW. The use of magnesium in experimental cerebral ischemia. In: Vink R, Nechifor M, editors. Magnesium in the Central Nervous System [Internet]. Adelaide (AU): University of Adelaide Press; 2011. Available from http://www.ncbi.nlm.nih.gov/books/NBK507247/ PubMed PMID: 29920002.

2)
Song X, Zhong X, Tang K, Wu G, Jiang Y. Serum magnesium levels and lung cancer risk: a meta-analysis. World J Surg Oncol. 2018 Jul 12;16(1):137. doi: 10.1186/s12957-018-1447-x. PubMed PMID: 30001198.