



ELEVATION OF
BRAIN MAGNESIUM WITH

SWISS CHARD AND BUCKWHEAT EXTRACTS

IN AN ANIMAL MODEL OF REDUCED
MAGNESIUM DIETARY INTAKE



Approximately 60% of U.S. adults consume less magnesium (Mg) than the established RDA. Sub-optimal magnesium status is associated with anxiety and is a risk factor for neurological disorders. Unfortunately, magnesium compounds commonly used in dietary supplements have poor bioavailability to the central nervous system.



MgD: Magnesium-deficient diet

$[Mg^{2+}]_{CSF}$: Magnesium concentration in cerebrospinal fluid

SC/BW: Swiss chard/buckwheat extract

STUDY QUESTIONS

1. Does a short-term, moderate reduction in magnesium dietary intake alter magnesium concentration in the brain?
2. Would a plant-based supplement made from Swiss chard and buckwheat extracts, rich in naturally occurring magnesium, elevate brain magnesium concentration?

METHODS

Healthy male rats were placed on a control diet or MgD for 30 days. After obtaining a baseline brain magnesium concentration via CSF, rats were switched to one of 6 diets for 14 days before re-measuring $[Mg^{2+}]_{CSF}$. The diets were either a control diet, MgD diet, or MgD diet supplemented with various magnesium supplements including SW/BW, Mg threonate, Mg citrate, or Mg glycinate.

RESULTS

13%

Reduction in dietary magnesium for 4 weeks resulted in a significant decrease in $[Mg^{2+}]_{CSF}$

14.5%

Increase of $[Mg^{2+}]_{CSF}$ in MgD + SC/BW group after 14 days on a supplemented diet

Other forms of magnesium supplementation had no significant effect on $[Mg^{2+}]_{CSF}$.

CONCLUSIONS

Short-term, moderate reduction in dietary magnesium intake leads to a significant decrease in magnesium concentration in cerebrospinal fluid, and the naturally occurring magnesium in the Swiss chard/buckwheat extract was the most efficient at elevating brain magnesium levels.