LUBRIZOL LIFE SCIENCE

Microencapsulated Minerals

MAGSHAPE™ microcapsules

Concentrated source of magnesium for an active lifestyle

Description

MAGSHAPE™ microcapsules is a highly concentrated magnesium source effective at restoring and maintaining a healthy level of magnesium in human cells and bones.

Composition

Magnesium Oxide, Modified Starch and Sunflower Lecithin.

* Product contains 30% of magnesium

A nutritional view

Magnesium is an essential mineral involved in energy metabolism, respiratory function and maintenance of normal muscle contraction and relaxation. Magnesium deficiency may lead to the distortion of neuromuscular function, suggesting a possible association between magnesium and muscle cramps.

However, despite magnesium's critical role, maintaining its intake at an adequate level has been frequently overlooked, therefore magnesium supplementation has been widely recommended.

In this respect, MAGSHAPE™ microcapsules can contribute to an appropriate muscular function and an adequate energy level for better performance. Furthermore, given its high magnesium content, more magnesium gets into the bloodstream to deliver its health benefits.
Additionally, as MAGSHAPE™ microcapsules contains magnesium oxide, it has more elemental magnesium, available to tissues.

An improved stability, flowability, compressibility and pleasant taste compared to other magnesium sources, is also achieved thanks to the microencapsulation technology applied in the product.

Applications

Capsules, tablets, chewable pills, orosoluble powders among other dietary supplements.

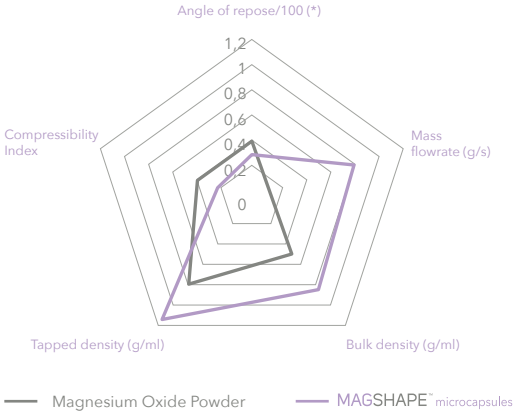
Competitive advantages

- Helps to relax and alleviates fatigue
- Provides vitality and stress relief
- Improves muscular function
- Enhanced flowability and compressibility

Lipofoods™
Nutraceutical Ingredients

Characterization - Rheological parameters comparison

The following parameters of MAGSHAPE™ microcapsules were compared to the unencapsulated magnesium oxide salt to demonstrate the significant improvement in the rheological properties of the microencapsulated product.



MAGSHAPE™ microcapsules **outperforms unencapsulated magnesium oxide**

Its properties including pleasant taste, good flowability and compressibility, make MAGSHAPE™ microcapsules an ideal magnesium source for nutraceutical products.

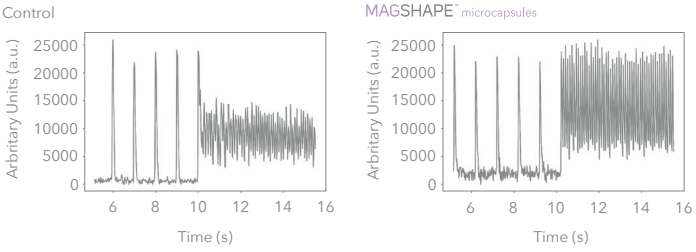
MAGSHAPE™ microcapsules **provide a relaxation effect on the nervous transmission**

MAGSHAPE™ microcapsules show a significant inhibition of 26.9% of NA release in human neuroblastoma cells compared to the control condition at the tested concentration.

In vitro efficacy - Muscular function improvement

High performance conditions were simulated (continuous stimulation at different frequencies for a long time) followed by induction of ramps (cramps) to study the effect of MAGSHAPE™ microcapsules on muscle relaxation.

Both muscle tissue bioprinted samples, control and MAGSHAPE™ microcapsules, were stimulated at 10 Hz for 10 s and the response of the muscles was determined.

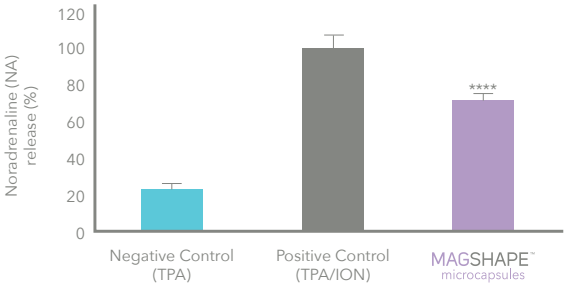


MAGSHAPE™ microcapsules **improve muscular function thanks to its relaxation capacity**

After treatment with MAGSHAPE™ microcapsules, the muscle relaxes more quickly, so it can maintain a frequency of 10 Hz (simulation of cramp) without entering tetanic contraction.

In vitro efficacy - Inhibition of NA release

In the neuromuscular junctions, the release of neurotransmitters from peripheric neurons to skeletal muscle allows muscle contraction. The inhibition of Noradrenaline (NA) release in a human neuroblastoma cell line of MAGSHAPE™ microcapsules was determined using a specific NA ELISA kit from IBL International.



For more information, visit www.lipofoods.com

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