Magnesium/Potassium Aspartates

Alleviates Fatigue

- Contains true, fully-reacted magnesium and potassium aspartates to support energy production in the body
- Helps with chronic fatigue syndrome
- Increases energy and strength
- Provides doses backed by clinical studies to deliver maximum relief from fatigue

Gluten Free  Vegan  Non-GMO  Energy/Fatigue Stress

AOR Code
AOR04224

Details
Aspartate or aspartic acid is a naturally-occurring amino acid, which alongside magnesium, plays a role in the production of ATP, the body’s energy source. Potassium is an essential electrolyte involved in both electrical and cellular functions that assist in the regulation of the body's acid-base balance and the proper functioning of nerve cells, which is essential for the transmission of neurochemical messages. Magnesium and potassium are known to cooperate in the body, with magnesium enhancing the cellular transport of potassium.

Studies with this combination have involved over 3000 human subjects, and it was shown that 65-91% of chronic fatigue sufferers taking fully-reacted magnesium and potassium aspartates (500 mg of each, twice daily) experienced clear-cut alleviation of their symptoms within 5 to 10 days. Magnesium and potassium are also important electrolytes, and several studies have demonstrated the beneficial effects of magnesium and potassium aspartates on sports performance.

Chronic fatigue sufferers and overreached or over-trained athletes can benefit greatly from the support provided by AOR Magnesium/Potassium Aspartates.

Label Info
Discussion
This mineral formula provides magnesium and potassium aspartate at doses backed by human research. Many “magnesium aspartate” and “potassium aspartate” supplements are actually blends of these forms with less effective oxides, chlorides, and other inorganic salts. Studies show that true magnesium aspartate helps maintain proper muscle function.

Product Variation

Product Code  Size
AOR04224  120 VEGI-CAPS

Supplements Facts

<table>
<thead>
<tr>
<th>Serving Size: 1 Capsule</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium (from 250 mg magnesium aspartate)</td>
<td>30 mg</td>
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<tr>
<td>Potassium (from 227 mg potassium aspartate)</td>
<td>50 mg</td>
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Non-medical ingredients:
sodium stearyl fumarate. Capsule: hypromellose.

Guarantees

AOR™ guarantees that all ingredients have been declared on the label. Contains no wheat, gluten, corn, nuts, peanuts, sesame seeds, sulphites, mustard, soy, dairy, eggs, fish, shellfish or any animal byproducts.

Adult Dosage

Take 1 capsule twice daily with food, or as directed by a qualified health care practitioner.

Cautions

None known.

Source

Pharmaceutical synthesis

Main Application

Chronic fatigue
Muscle function
Mineral supplement

Disclaimer
Research
Background

Chronic Fatigue Syndrome

The term “chronic fatigue syndrome” is a recent one, but there’s no reason to believe that it’s a new disease. Clinicians recognized the soul-draining exhaustion, poor stamina, flu-like symptoms, unrefreshing sleep, and problems with concentration and short-term memory that characterize the disorder as early as the times of Queen Victoria, when it was termed neurasthenia. The disorder achieved greater recognition in the 1950s, although under the dismissive term “housewife syndrome,” and researchers began to look for its biological basis.

The Hunt

Dr. Henri Laborit, a researcher with the French navy who went on to make many fundamental discoveries in psychiatric pharmacology, hypothesized that the exhaustion of body and brain associated with chronic fatigue might be the result of a failure of cellular bioenergetics. Accordingly, he began looking for a treatment by testing a variety of compounds already known, in his day, to be metabolites in the body’s energy cycles, looking for natural molecules that could restore neuromuscle function to exhausted laboratory animals.

Magnesium & Potassium Aspartates

Laborit screened a wide range of substances involved in various ways with energy production at the cellular level, including glutamate, glutamine, isotonic ion mixtures, and assorted sugars, vitamins, and amino acids and their mineral salts – and found that fully-reacted magnesium and potassium aspartates most consistently offset metabolic exhaustion in his models.

These compounds exert a range of important influences on the energy-producing tricarboxylic acid (TCA) cycle in the mitochondrial matrix. Aspartic acid is a critical energy-carrying TCA intermediate produced from oxaloacetate, as well as being an excitatory neurotransmitter in the central nervous system. Magnesium plays a critical role in the production and stabilization of ATP: it activates almost all the enzymes of glycolytic and the tricarboxylic acid cycle, and forms a complex with ATP, without which it is quickly broken down into the low-energy adenosine diphosphate (ADP) and inorganic phosphate and cannot fuel cell metabolism and transport. And while widely underappreciated, potassium is an essential electrolyte involved in both electrical and cellular functions in the body, which assists in the regulation of the body’s acid-base balance and is needed for the proper functioning of nerve cells, being essential for the transmission of neurochemical messages along the axon. Potassium deficiency results in symptoms very similar to aspects of chronic fatigue, featuring muscular weakness, depression, fatigue, and malaise. Furthermore, magnesium and potassium are known to cooperate in the body: magnesium enhances the cellular transport of potassium.
The Trials

Laborit’s work was picked up by the pharmaceutical giant Wyeth, who moved the energizing combination through further animal experiments and ultimately into multiple uncontrolled and ultimately double-blind studies involving over 3000 patients under the trade name “Spartase.” Consistently across these trials, 65 to 91% of chronic fatigue sufferers taking fully-reacted magnesium and potassium aspartates (500 mg of each, twice daily) experienced clear-cut alleviation of their symptoms. Victims typically began to notice the effects within a week: improvements were usually noted within five days, and rarely took more than 10 days to set in.

The Burial

“Spartase” was a listed “drug” for fatigue in the United States in 1961. The company had big plans for it: not only was there a potentially huge market for fully-reacted magnesium and potassium aspartates in desperately fatigued people, but according to Dr. Jonathan V. Wright they also were pursuing evidence that it was also an effective treatment for erectile dysfunction. But instead, the FDA banned this magnesium and potassium aspartates supplement from the pharmaceutical market in 1970. No new evidence had been advanced to suggest that it was unsafe or ineffective. So what happened?

Following amendments to the Food, Drug, and Cosmetics Act of 1962, the FDA commissioned a panel of psychopharmacologists to review all of the drugs that had been introduced between 1938 and 1962. There were serious problems with this process, as outlined in a recent article in the Drug Discovery sister-journal of the prestigious science publication Nature by Dr. Edward Shorter, who is Hannah Chair in the History of Medicine at the University of Toronto and a Jason A. Hannah Medalist. The experts consulted were academics and asylum researchers with minimal clinical experience with the drugs they were reviewing, at a time when 70% of psychiatric drugs were prescribed by GPs and internists. And when the experts disagreed about a drug’s efficacy, even one ‘nay’ on a panel would bump a treatment from being classified “effective” to “probably effective,” even if all the other panelists thought it to be a good therapy.

And then, FDA forced the withdrawal of all of those “probably effective” drugs, unless the companies holding their licenses were ready to initiate a new round of large controlled trials immediately, within months of the panel’s reports. This wasn’t just unreasonable – it was impossible: in 1970, the National Association of Science writers was told that there literally were “just not enough clinical investigators in this country to carry out all the studies that will be demanded” to fulfill FDA requirements. In the ensuing purge, over 48% of all of the psychiatric drugs on the market were forced off the market – including the previously-registered fully-reacted magnesium and potassium aspartate supplement.

A Rebirth – with Complications

After the Dietary Supplements Health and Education Act (DSHEA) increased Americans’ access to supplements in 1994, various ‘magnesium-potassium aspartate’ supplements appeared on the market, although they continued to be unavailable legally in Canada. Unfortunately, true, fully-reacted magnesium and potassium aspartates are both expensive and bulky, because the aspartic acid chelate takes up a lot of room; as a result, you need four capsules or tablets a day to get 1000 milligrams of each compound a day – the dose established by clinical trials.

To make their pills more competitive, most supplement companies sell “compromise” products. Some
companies sell low-potency products, or just tell their customers take less capsules than is needed to get the effective dose. But most companies just don’t put the real thing into their pills: instead, they use so-called magnesium and potassium aspartate “blends,” which contain magnesium and potassium aspartates “cut” with higher-density (but less bioavailable and less effective) magnesium and potassium forms (such as oxides, carbonates, or chlorides). Using these diluted raw materials, companies can pretend that there is more magnesium and potassium aspartate in their pills than there really is, ironically making an inferior product look unusually “high-potency.”

But today, true, fully-reacted magnesium and potassium aspartate supplements are available from responsible suppliers. While it can be hard for consumers to tell a real product from a bogus one, one way to distinguish authentic magnesium and potassium aspartates from “blends” is to look at the claimed elemental content. The real thing assays at 7.5% elemental magnesium and 22.5% potassium by mass (or about 19 and 55 milligrams per 250 mg of the respective chelate ingredients). This means more capsules – and more people experiencing the full benefits of taking the authentic supplement.

**Research**

In one double-blind clinical trial involving 145 patients, 85% of those given potassium and magnesium aspartates reported an increase in strength or physical activity, versus to only 9% of patients taking the placebo. This study included patients whose fatigue had no obvious physical cause, along with patients with fatigue associated with anxiety neuroses, gastrointestinal disturbances, menopause, the postpartum period, and a previous influenza infection.

A second placebo-controlled study involved 84 women and 16 men who had been suffering with fatigue symptoms unrelated to depression for more than two years. Participants in the trial took either the aspartate mixture or dummy pills for periods of either two or 4-6 weeks. Over the course of 4-10 days, people taking the supplement began to awaken from their fatigue, with 87% of the fully-reacted magnesium and potassium aspartate supplementers experiencing relief.

Researchers associated with the company, in collaboration with the Homestead Air Force Base in Florida and the University of Tennessee College of Medicine, performed an additional series of studies. One of these studies was a placebo-controlled clinical trial, in which 32 patients who had some organic disease (including 24 people with arthritis, with the remainder made up of persons with headache, depression, rheumatic fever, trauma, asthma, lupus, infectious mononucleosis (“mono”) or duodenal ulcer) under stable conditions for a month, received either the standard dose of fully-reacted magnesium and potassium aspartates or placebo tablets for a month, and then crossed over to the other treatment.

While they were taking the supplement, 21 (65%) of these individuals reported relief of their fatigue, while 9 were deemed “questionable” (since they reported relief with magnesium and potassium aspartates, but also seemed to feel better while taking the placebo); only two reported no response. During the placebo period, only three people reported relief of their fatigue, with 25 experiencing no response to the dummy treatment.

Out of curiosity, these same researchers tried giving the aspartate mixture to 46 healthy, unfatigued persons, with no hint as to the results to be expected beyond assuring them of the safety of the
supplement. Only four people reported feeling better while taking the supplement, clearly, there was some direct need for the supplement in fatigued individuals.

Finally, the same team used rheotome measurements to test the neuromuscular excitability of healthy persons with no fatigue, fatigued persons with no organic disease, and the same fatigued persons after they had taken magnesium and potassium aspartates. Compared to the control group, fatigued persons showed significant evidence of neuromuscular fatigue, as demonstrated by hyperexcitability of both nerve and muscle. Interestingly, after taking the supplements, the hyperexcitability of the muscles was significantly normalized by fully-reacted magnesium and potassium aspartates – yet the hyperexcitability of the nerves was not affected. The correlation between normalization of the patients’ muscular excitability and his or her subjective experience of relief was 88%. Tests on fatigued individuals with stable, debilitating disease (including cancer, hyperthyroidism, and arthritis) led to similar results.

In her blinded trial, Dr. Palma Formica reported that 87% of her fatigued patients using magnesium and potassium aspartates supplements experienced relief, which she characterized as “startling”: patients taking fully-reacted magnesium and potassium aspartates “had become alert, cheerful, animated and energetic and walked with a lively step. They stated that sleep refreshed them as it had not done for months… Morning exhaustion had completely subsided”.

**Market Trends**

Magnesium and potassium aspartates are most commonly taken to assist the body with normal contraction of muscle cells and for maintaining cellular water balance. Magnesium is also important for skeletal development, nerve and heart functions and for healthy teeth.

Some people shy away from taking aspartate forms of supplements due to its association with aspartame. Aspartic acid is not the same as aspartame. For a more detailed explanation, see the FAQ tab.

**AOR Advantage**

Many magnesium and potassium aspartates are mixed with other compounds. AOR’s Magnesium / Potassium Aspartates contain true, fully-reacted nutrients in doses backed by clinical studies to deliver maximum relief from fatigue.

**References**


Nagle FJ, Balke B, Ganslen RV, Davis AW. The mitigation of physical fatigue with “Spartase”. FAA
Abstract

[Clinical investigation of the protective effects of potassium magnesium aspartate against arrhythmia and its possible anti-oxidative mechanism]. [Article in Chinese]


Zhi YF, Huang YS, Xu BS, Wang SR.

OBJECTIVE: To investigate the protective effects of potassium magnesium aspartate against oxidative stress status and lipid oxidative damage in the patients with angina and arrhythmia due to coronary artery disease, its therapeutic effect on arrhythmia and its possible mechanism.

METHODS: With single blind protocol, 98 patients with angina and arrhythmia due to coronary artery disease were randomly divided into (1) Experiment group (n = 65), who received routine remedy for coronary heart disease plus potassium magnesium aspartate. (2) Control group (n = 33), who received only routine therapy for coronary heart disease without potassium magnesium aspartate. Reduced glutathione (GSH), oxidized glutathione (GSSG), malondialdehyde (MDA) and oxidized low density lipoprotein (ox-LDL) in plasma of all patients were examined before and one week after treatment, all patients with arrhythmia were equipped with Holter for continuous monitoring of cardiac rhythm.

RESULTS: After one week’s treatment, the GSH level in plasma of experiment group and the ratio of GSH and GSSG (GSH/GSSG) were significantly increased comparing with control group (both P

CONCLUSION: Potassium magnesium aspartate can strikingly improve oxidative stress status and decrease lipid oxidative damage in the patients with coronary heart disease, and the frequent premature beats were also significantly reduced by potassium magnesium aspartate. The analysis of above results reveals an intrinsic relationship between the improvement of oxidative stress status and the good therapeutic effects on frequent premature beats by potassium magnesium aspartate, which may suggest an involvement of oxidative stress in the pathogenesis of arrhythmias.

[Therapy of cardiac arrhythmias. Clinical significance of potassium- and magnesium aspartate in arrhythmias]. [Article in German]

Fortschr Med Orig. 2002;120(1):11-5.

Manz M, Susilo R.

Potassium and magnesium deficiencies usually coexist and represent a risk factor for cardiac arrhythmias. Serum levels—in particular of magnesium—are inconclusive for establishing a possible electrolyte deficiency. Basic treatment of arrhythmia should therefore include the administration of
potassium and magnesium, since the benefit is great, and the possible side effects is negligible. A placebo-controlled study involving patients with cardiac arrhythmias revealed that appreciably fewer ventricular asystoles occurred after three weeks of treatment with potassium and magnesium aspartate, even when serum levels were within the normal range prior to initiating treatment. Patients older than 50, and those with previous coronary heart disease and/or myocardial infarction derived particular benefit from this form of treatment. These results underscore the key role played by potassium and magnesium in the treatment of cardiac arrhythmias.

Treatment of fatigue in general practice: a double blind study.


Hicks JT.

A series of 145 office patients were treated, under double blind conditions, with the aspartates for chronic fatigue. The daily dose totaled 4 Gm., by mouth. The study was continued for 18 months. When the code was broken it was determined that 46 per cent had received the active compound; 54 per cent, a placebo. The response was graded by the examiner on the basis of his evaluation of the patient at each weekly return visit. Eighty-five per cent obtained a positive effect from the active medication. Only 9 per cent reacted to the placebo. These results are comparable to other controlled clinical studies so far reported in the United States.

The housewife syndrome. Treatment with the potassium and magnesium salts of aspartic acid.


Formica PE.

One hundred patients (84 housewives and the husbands of 16) in moderate financial circumstances, who complained of excessive and constant fatigue, were treated, under blind conditions, with potassium and magnesium salts of aspartic acid (aspartates). Ninety per cent of the series had no diagnosable disease. Seventy-one per cent had received no previous medical treatment for tiredness; empiric medication had been administered to the remainder with little or no therapeutic effect. A total daily dose of 4 tablets is probably necessary, but the schedule for administration need not be rigid. Twenty-six per cent of the patients received placebos in cross-over studies. A therapeutic response (definite increase in energy and strength) was obtained in 87 per cent of the treatment periods, in five to ten days (in 54 per cent by the seventh day). The patients experiencing the postviral syndrome (49 per cent of the series) exhibited a positive response. No positive reaction occurred under placebo medication. The treatment is self-limiting; about six weeks of medication seem to be required in the average case. Mild gastrointestinal intolerance was encountered in 3 per cent.

The mitigation of physical fatigue with “Spartase”. FAA Office of Aviation Medicine Reports.
Pharmacological and clinical observations have indicated that Spartase – the aspartic acid salts of potassium and magnesium – takes part in the intermediary metabolism and moderates physical fatigue. In this study attempts were made to evaluate effects of the drug on work capacity before and after episodes of physically fatiguing exercises. Work capacity was determined by a standardized treadmill test. The test was repeated after the subject had been running cross-country for a period of 60 minutes, and again after another such period of 40 minutes. In this way effects of fatigue upon functional adaptability to stress become apparent. Then Spartase was taken orally in a prescribed dose for two weeks where upon the same testing procedure was re-applied. The results indicated that Spartase improved the endurance performance of untrained individuals engaging in extremely fatiguing physical work. It appeared to have no effect on highly trained individuals.

Management of fatigue: a physiologic approach.


Shaw DL, Chesney MA, Agersborg HP.

Fatigue is a clinical entity of sufficient import to warrant definitive therapy. Theoretical considerations of fatigue as a state of metabolic insufficiency or inefficiency have been proposed and a physiologic approach to management of the condition has been described. The potassium and magnesium salts of aspartic acid have been investigated for treatment of fatigue in more than 2,000 patients in the United States. Of this total, a series of 163 subjects, comprising a blind study, is described in detail; normal and placebo controls and a double blind cross over trial were included. This investigation demonstrated subjective and objective evidence of relief of fatigue, whether or not organic disease was associated. Positive and negative subjective results correlated well with objective data obtained with the electronic rheotome.