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DMG stands for Dimethylglycine, also known as Vitamin B15 or *Pangamic Acid*. Body cells produce **DMG** during the processing of the amino acid *methionine*. While there are no official deficiency symptoms, it is often deficient. There are no side effects even in high dosages, although it seems to work best when cycled up and down in dosage.

First used by the Russian track and field stars in the Olympics in the nineteen sixties and seventies, **DMG** appeared to delay the onset of lactic acid production and to assist in oxygenating the blood. Muscle spasms and resultant injuries were reduced while speed, endurance and muscle tone were increased probably due to the increased blood oxygenation.

Dr. Thomas Pipes, of the Institute of Human Fitness in Escondido, CA, discovered in his one-week, double blind study that **DMG** users showed a 27.5% increase in oxygen uptake in the muscles, and a 23.6 % increase in time to exhaustion in treadmill tests.

Another double blind clinical study at Medical University of South Carolina showed that **DMG** increases *antibody* production in humans by 400%.

Rex A. Ewing in *Beyond the Hay Days* says of **DMG**: *“Probably of most interest to horsemen is the way in which **DMG** assists in the process of aerobic respiration. It appears to aid in the transport of oxygen across the cell to the mitochondria, small organelles within the cell where energy reactions take place. By making more oxygen available for aerobic respiration, **DMG** delays the buildup of lactic acid in the muscles. It also helps in the breakdown of lactic acid in the muscles and the blood. Since lactic acid is a limiting factor in the quality of a performance – and the recovery time following the performance – any nutrient that enhances respiration is potentially beneficial.”*

According to Erica Stoton writing in *Natural Horse* Vol 3 Issue 5, **DMG** is an amino acid metabolite

which is also classified as vitamin B15, a metabolism enhancer or *ergogenic* substance. It is responsible for the flow of nutrients, methyl and oxygen through the cells and enhances immunity by stimulating the production of T-cells.

One ounce of **DYNAMITE® DMG** contains 1500 mg. and is formulated and approved only for animal use. Available in 3# jars, it has a slightly sweet/tart taste. Distributors and customers have used it in numerous ways, among which are:

- for a middle-of-the-afternoon pick-me-up for humans (½ tsp. or so)
- for athletic competition, that amount might be doubled before returning to maintenance levels
- because of the increased blood oxygenation, it can assist in the body’s ability to handle altitude changes and even founder, abscesses and switching from shoes to barefoot—in fact, all injuries seem to heal faster
- for race horses, many trainers start using it about 1 week before a race and continue it for 1-2 days beyond the race; it has been discovered that if on **DMG** for longer than 3 weeks at a time, such horses tend to “flatten out”
- for endurance horses or marathon runners
- for horses who tie-up
- for those challenged with systemic infections that will not heal
- some individuals have reported fewer and/or lessened intensity of seizures in both animals and people
- because of its immune system enhancement, many have found it helpful during the course of infections of any kind such as allergies, cancers, etc; even hypothyroidism and arthritis
- some breeders have discovered that **DMG** stimulates growth in undersized foals as well, by raising the level of growth hormones
- some individuals have used it, for themselves or their animals, when traveling, or moving, to higher altitudes
- scientists also speculate that the brain, by receiving more oxygen, increases its ability to generate energy even to lifting some depressions

WHENEVER EXTRA BLOOD OXYGENATION might be beneficial, **DYNAMITE® DMG** should be a consideration. ■

Vitamin B15 -- Pangamic Acid

By Elson M. Haas M.D.

*Excerpted from STAYING HEALTHY WITH NUTRITION:
THE COMPLETE GUIDE TO DIET AND NUTRITIONAL MEDICINE
[[HTTP://WWW.HEALTHY.NET/SCR/ARTICLE.ASP?ID=1925](http://www.healthy.net/scr/article.asp?id=1925)]*

This is still a fairly controversial "vitamin." The quotation marks suggest that we are not sure whether it is a vitamin. It has not yet been shown to be essential in the diet (vitamins must be supplied from external sources), and no symptoms or deficiency diseases are clearly revealed when consumption is restricted. The FDA has been concerned about the wide range of medical conditions treated with it, primarily in other countries, and therefore pangamic acid is not readily available to the U.S. consumer. Because most of the information about pangamic acid is dated and is mainly from European and former Soviet Union research, I discuss this substance here mainly for completeness.

The former Soviet Union had been the most enthusiastic about pangamic acid, feeling that it is a very important nutrient with physiological actions that can treat a multitude of symptoms and diseases. Soviet scientists had shown that pangamic acid supplementation can reduce the buildup of lactic acid in athletes and thereby lessen muscle fatigue and increase endurance. It had been used regularly and commonly in the Soviet Union for many problems, including alcoholism and drug addiction; mental problems such as those of aging and senility, minimal brain damage in children, autism, and schizophrenia; heart disease and high blood pressure; diabetes; skin diseases; liver disease; and chemical poisonings.

As I said, the FDA has taken pangamic acid products off the market. Dimethyl glycine (DMG) has been used by some people as a substitute as it is thought to increase pangamic acid production in the body. Dimethyl glycine combines with gluconic acid to form pangamic acid. It is thought that the DMG is the active component of pangamic acid.

Sources: Pangamic acid was first isolated in 1951 by Drs. Ernest Krebs, Sr. and Jr., from apricot kernels, along with laetrile, termed vitamin B17. At that time, as today, they were not sure whether it was essential to life.

Pangamic acid is also found in whole grains such as brown rice, brewer's yeast, pumpkin and sunflower seeds, and beef blood. Water and direct sunlight may reduce the potency and availability of B15 in these foods.

Functions: Pangamic acid is mainly a methyl donor, which helps in the formation of certain amino acids such as methionine. It may play a role in the oxidation of glucose and in cell respiration. By this function, it may reduce hypoxia (deficient oxygen) in cardiac and other muscles. Like vitamin E, it acts as an antioxidant, helping to lengthen cell life through its protection from oxidation. Pangamic acid is also thought to offer mild stimulation to the endocrine and nervous systems, and by enhancing liver function, it may help in the detoxification process.

Uses: Although many of these uses are not proven, there have been reports of pangamic acid or DMG providing some benefits for a wide range of symptoms, diseases, and meta-

bolic problems. It may be useful for such symptoms as headaches, angina and musculoskeletal chest pain, shortness of breath, insomnia, and general stress—to be used, of course, only after specific medical conditions are ruled out.

B15 has been shown to lower blood cholesterol, so it could provide some nutritional support for those with high serum cholesterol or cardiovascular problems or to reduce heart and blood vessel disease risks. It may also help improve circulation and general oxygenation of cells and tissues, so it may be used with any decreased cardiac or brain functions. Pangamic acid may be helpful in general for atherosclerosis and hypertension, America's most common diseases.

In Europe vitamin B15 has been used to treat premature aging, because of both its circulatory stimulus and its antioxidant effect. It is felt to be a helpful protectant from pollutants, especially carbon monoxide. Pangamic acid (and possibly DMG) support for anyone living in a large polluted city or with a high-stress lifestyle could be a wave of the future.

In Russia, a big use of pangamic acid has been for treating those with alcohol problems, possibly reducing the craving. It has been reported to diminish hangover symptoms when alcohol has been abused. B15 has also been used to treat fatigue, as well as asthma and rheumatism, and it may even have some antiallergic properties. Some child psychiatrists have reported good results using pangamic acid in disturbed children; it may help by stimulating speaking ability and other mental functions. B15 may also be useful in problems of autism.

More studies regarding all claims of the benefits of pangamic acid must be done, of course, to see which ones may be valid. But as of now, it certainly is a "vitamin" or supplemental nutrient with potential health benefits and research interest.

Deficiency and toxicity: There are no known toxic effects from even high amounts of pangamic acid; 50–100 mg. (and even more) taken three times daily have revealed no side effects. There are reports of initial mild nausea with use of pangamates at high levels, but this only lasts a few days.

There is limited information about deficiencies of pangamic acid. There are no clear problems when it is absent in the diet, though some diminished circulatory and oxygenation functions are possible. Decreased cell respiration—that is, decreased oxygen use by cells—may influence many other cellular functions which may lead to effects on the heart.

Requirements: There is no RDA for pangamic acid. At the time of this writing, it is not legal to distribute B15 in the United States, though it was used as a supplement for some time in the 1970s. The most common form of pangamic acid was calcium pangamate, but currently it is dimethyl glycine (DMG), which may even be the active component that has been hailed in the Soviet Union. Pangamic acid or DMG, when used, is often taken with vitamin E and vitamin A. A common amount of DMG is 50–100 mg. taken twice daily, usually with breakfast and dinner. This level of intake may improve general energy levels, support the immune system, and is also thought to reduce cravings for alcohol and thus may be very helpful in moderating chronic alcohol problems.