CALCIUM D-GLUCARATE - QUESTIONS AND ANSWERS

1. **Q. What is Calcium D-Glucarate?**
   A. Calcium D-Glucarate is the calcium salt of D-glucaric acid, a substance produced naturally in small amounts by mammals, including humans. Glucaric acid is also found in many fruits and vegetables with the highest concentrations to be found in organges, apples, grapefruit and cruciferous vegetables.

2. **Q. What are the results of oral supplementation of Calcium D-Glucarate?**
   A. Oral supplementation of Calcium D- Glucarate has been shown to inhibit beta-glucuronidase, an enzyme produced by colonic micro-flora and involved in phase II liver detoxification. Elevated beta-glucuronidase activity is associated with an increased risk for various cancers, particularly hormone-dependent cancers such as breast, prostate and colon cancers.

3. **Q. Misc. Clinical applications of Calcium D-Glucarate.**
   A. Other potential clinical applications of oral calcium d-glucarate include regulation of estrogen metabolism and as a lipid-lowering agent. Upon ingestion and exposure to the acidic environment of the stomach, calcium d-glucarate is metabolized to form d-glucaric acid. D-Glucaric acid is further metabolized in the gastrointestinal tract into three compounds existing in equilibrium and comprised of approximately 40 percent d-glucaric acid, 30 percent d-glucaro-1,4 lactone, and 30 percent d-glucaro-6,3 lactone. These compounds are then transported to the blood and various internal organs, and are subsequently excreted in the urine and bile.

4. **Q. What makes Calcium D-Glucarate an excellent detoxification product?**
   A. Calcium D-Glucarate's detoxifying and anti carcinogenic properties are attributed to its ability to increase glucuronication and excretion of potentially toxic compounds. During Phase II detoxification, chemical carcinogens, steroid hormones and other lipid-soluble toxins are conjugated with glucuronic acid in the liver (glucuronication), and excreted through the billary tract.

5. **Q. Is calcium d-glucarate an essential nutrient?**
   A. Calcium D- Glucarate is not an essential nutrient so, technically, no deficiency state exists. However, since it is only produced in small amounts by humans, it is important that dietary intake be adequate. Diets low in fruits (particularly oranges, apples and grapefruit) and cruciferous vegetables (broccoli, cabbage, and brussel sprouts) may result in a relative deficiency of calcium d-glucarate and its metabolites. Research has shown a low level of d-glucaric acid correlates with a higher level of beta-glucuronidase, which in turn is associated with an increased risk for various cancers.

6. Q. What type of chemical is Glucaric Acid?

A. Glucaric Acid is a chemical made by the body and also consumed in foods. For dietary supplementation, it is combined with calcium to form calcium-glucarate.

7. Q. Does Calcium D-Glucarate help with the potential prevention of some cancers?

A. Because it is thought to hasten the elimination of potentially harmful substances from the body, glucaric acid has been promoted for preventing cancer. Calcium d-glucarate is known to decrease the amounts of an enzyme that is believed to be associated with certain cancers - particularly cancers of the breast, colon and prostate. Additionally glucaric acid intereferes with the reabsorption of estrogen from the gastrointestinal tract. As a result, more estrogen is eliminated and less stays in the blood. High estrogen levels have also been associated with the development and growth of breast, colon, and prostate cancers. While studies conducted in laboratory animals seem to confirm these theories, few studies have been conducted in humans.

A book by Thomas J. Slaga, PhD., and Judi Quilici-Timmeke, M.S. by the title of

D-Glucarate, A Nutrient Against Cancer has an abundance of information on cancer and D-Alpha Lipoic Acid.

8. Q. DETOX AND IMMUNITY as related to Calcium D-Glucarate

A. Everyone must realize that optimizing metabolism and growth requires a 'clean' internal/chemical environment. That can't be stressed enough. The liver is the key organ for detoxification, as well as for literally hundreds of other reactions that directly impact anabolism and catabolism in muscle and connective tissue. The immune system controls tissue repair. Detoxifying the body, and thus reducing the associated load on the liver and immune system, allows more of those systems capacities and more of the body's energy to be directed toward repair of exercise induced tissue damage, more effective nutrient processing and muscle growth. It should be obvious that a clean internal environment would make a difference in how your body responds to training, especially over the long term.