Weider Nutrition International
2002 South 5070 West
Salt Lake City UT 84104

STRUCTURE / FUNCTION CLAIMS

NUTRIENT: Glucarate and antioxidants

1 6 65 98 FEB 18 A8:50

DATE: January 12, 1998 BY: Luke R. Bucci, PhD
Document Name: sf01gluc.wpd

BRAND, CODE # & PRODUCT NAME(S): GAN 52500 NuStart Glucarate 45t

NUTRIENT AMOUNT: 200 mg Calcium D-Glucarate; 200 mcg Selenium (Selenomax); 500 mg vitamin C

STRUCTURE/FUNCTION CLAIM:

- Helps the body bind & remove harmful elements
- Provides nutritional support for the body's cleansing element

NuStart™ Glucarate is a patented formula which has been shown to enhance the major cleansing pathways in the body. This unique formula also combines other synergistic ingredients that help neutralize free radicals and further enhance the effects of glucarate.

L R Bucci 1/14/98
Approved by / Date

REFERENCES:

Glucarate

1. Abou-Issa H, Dwivedi C, Curley RW, Kirkpatrick R, Koolemans-Beynen A, Engineer FN, Humphries KA, el-Masry W, Webb TE. Basis for the anti-tumor and chemopreventive activities of glucarate and the glucarate:retinoid combination. *Anticancer Res* 1993; 13(2):395-399.
2. Dwivedi C, Heck WJ, Downie AA, Larroya S, Webb TE. Effect of calcium glucarate on beta glucuronidase activity and glucarate content of certain fruits and vegetables. *Biochem Med Metab Biol* 1990; 43(2):83-92.
3. Walaszek Z. Chemopreventive properties of D-glucaric acid derivatives. *Cancer Bull* 1993; 45:435-457.
4. Walaszek Z. Potential use of D-glucaric acid derivatives in cancer prevention. *Cancer Bull* 1990; 54:1-8.
5. Walaszek Z, Hanausek-Walaszek M, Webb TE. Dietary glucarate-mediated reduction of sensitivity of murine strains to chemical carcinogenesis. *Cancer Lett* 1986; 33:25-32.
6. Webb TE, Pham-Nguyen MH, Darby M, Hamme AT. Pharmacokinetics relevant to the anti-carcinogenic and anti-tumor activities of glucarate and the synergistic combination of glucarate:retinoid in the rat. *Biochem Pharmacol* 1994; 47(9):1655-1660.
7. Kyle E, Carper A, Bowen P. Caffeine consumption and vegetarian diets affect D-glucaric

acid excretion in man. *Nutr Res* 1987; 7:461-470.

Selenium

1. Levander OA, Burk RF. Selenium, in *Modern Nutrition in Health and Disease*, 8th ed., Shils ME, Olson JA, Shike M, Eds., Lea & Febiger, Philadelphia, 1994, 242-251.
2. Neve J, Favier A, Eds., *Selenium in Medicine and Biology*, Walter de Gruyter, Berlin, 1988.
3. Wendel A, Ed., *Selenium in Biology and Medicine*, Springer-Verlag, Berlin, 1988.
4. Clark LC, Combs GF, Turnbull BW, Slate EH, Chalker DK, Chow J, Davis LS, Glover RA, Graham GF, Gross EG, Krongrad A, Lesher JL, Park HK, Sanders BB, Smith CL, Taylor JR, Nutritional Prevention of Cancer Study Group. Effects of selenium supplementation for cancer prevention in patients with carcinoma of the skin. *JAMA* 1996; 276(24):1957-1963.
5. Schrauzer GN. Selenium. Mechanistic aspects of anticarcinogenic action. *Biol Trace Elem Res* 1992; 33:51-62.

Vitamin C

1. Jacob RA. Vitamin C, in *Modern Nutrition in Health and Disease*, 8th ed., Shils ME, Olson JA, Shike M, Eds., Lea & Febiger, Philadelphia, 1994, 432-448.
2. Englard S, Seifter S. The biochemical functions of ascorbic acid. *Ann Rev Nutr* 1986; 6: 365-406.
3. Bender DA. Vitamin C, in *Nutritional Biochemistry of the Vitamins*, Cambridge University Press, Cambridge, 1992, 360-393.
4. Ginter E. Ascorbic acid in cholesterol metabolism and in detoxification of xenobiotic substances: problem of optimum vitamin C intake. *Nutrition* 1989; 5(6):369-374.
5. Yong LC, Brown CC, Schatzkin A, Dresser CM, Slesinski MJ, Cox CS, Taylor PR. Intake of vitamins E, C, and A and risk of lung cancer. The NHANES I epidemiologic followup study. First National Health and Nutrition Examination Survey. *Am J Epidemiol* 1997; 146(3):231-243.
6. King TM, Trizna Z, Wu X, Amos CI, Fueger RH, Fueger JJ, Fritsche HA, Hsu TC, Winn R, Spitz MR. A clinical trial to evaluate the effect of vitamin C supplementation on in vitro mutagen sensitivity. The University of Texas M.D. Anderson Clinical Community Oncology Program Network. *Cancer Epidemiol Biomarkers Prev* 1997; 6(7):537-542.
7. Lykkesfeldt J, Loft S, Nielsen JB, Poulsen HE. Ascorbic acid and dehydroascorbic acid as biomarkers of oxidative stress caused by smoking. *Am J Clin Nutr* 1997; 65(4):959-963.
8. Prieme H, Loft S, Nyyssonen K, Salonen JT, Poulsen HE. No effect of supplementation with vitamin E, ascorbic acid, or coenzyme Q10 on oxidative DNA damage estimated by 8-oxo-7,8-dihydro-2'-deoxyguanosine excretion in smokers. *Am J Clin Nutr* 1997; 65(2):503-507.

Glucarate, Vitamin C, Selenium

1. Steinmetz KA, Potter JD. Vegetables, fruit, and cancer. II. Mechanisms. *Cancer Causes Control* 1991; 2(6):427-442.
2. Kelloff GJ, Boone CW, Steele VE, Fay JR, Lubet RA, Crowell JA, Sigman CC. Mechanistic considerations in chemopreventive drug development. *J Cell Biochem Suppl* 1994; 20:1-24.
3. Comstock GW, Alberg AJ, Huang HY, Wu K, Burke AE, Hoffman SC, Norkus EP, Gross M, Cutler RG, Morris JS, Spate VL, Helzlsouer KJ. The risk of developing lung cancer associated with antioxidants in the blood: ascorbic acid, carotenoids, alpha-tocopherol,

selenium and total peroxyl radical absorbing capacity. *Cancer Epidemiol Biomarkers Prev* 1997; 6(11):907-916.