

Glutathione System in Defense of Prostate Problems

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Prostate hypertrophy (enlargement) is more often benign than malignant. It is age related, increasing to over 80% in men over 80. Several factors are related to this condition, one being male hormones (androgens) and another being deficiencies in glutathione (GSH) enzymes, in particular GSH-S-transferases. It has been proposed that deficiency in this glutathione enzyme system increases the likelihood of developing both an enlarged prostate and prostate cancer (1).

In addition to the traditional treatments (surgical removal, laser therapy, radiotherapy, chemotherapy and hormonal treatment) for prostate cancer, a number of alternative or complementary therapies are gaining acceptance. One is diet (low fat, high fiber) and another is the use of antioxidants including vitamin A, lycopene and selenium. A recent study by the National Cancer Institute showed that selenium supplementation dramatically reduced the incidence of prostate cancer (2) and others have confirmed that higher selenium levels in individuals correlated with a decreased risk of developing advanced prostate cancer (3). It is noteworthy that selenium is an integral part of GSH peroxidase, the enzyme that mediates antioxidation by glutathione.

Androgens have been reported to stimulate free radical damage and deplete glutathione in human prostate cancer cells (4). Given the natural decline of glutathione levels with aging, it is suggested that androgens induce pro-oxidative stress, which, unopposed by a weakened glutathione system, contributes to the development of prostate cancer.

Studies are in progress to investigate the benefit of using Immunocal as a complementary treatment for prostate cancer since this dietary supplement is already proven to raise intracellular glutathione in normal adults (5). A number of case reports describing the beneficial effects of this treatment in prostate cancer patients have recently been published by Bounous (6). In these patients PSA (prostate specific antigen) values fell, indicating reduction of the tumor mass.

Immunocal is also indicated for use as a prophylaxis against benign hypertrophy as well as cancer since both conditions appear to be related to deficiency in the glutathione enzyme system.

In summary, there is increasing evidence that the glutathione system provides a vitally important defense against prostate problems. Therefore, dietary treatments to support or enhance this system, in particular Immunocal® and selenium, could be very important in maintaining a healthy gland as well as providing protection against the development of prostate cancer.

References

1. Moskaluk CA, Duray PH, Cowan KH et al. Immunohistochemical expression of pi-class glutathione S-transferase is down-regulated in adenocarcinoma of the prostate. *Cancer* 79:1595-1599,1997.
2. Clark LC, Dalkin B, Krongrad A et al. Decreased incidence of prostate cancer with selenium supplementation: results of a double-blind cancer prevention trial. *Br J Urol* 81:730-734,1998.
3. Yoshizawa K, Willett WC, Morris SJ et al. Study of prediagnostic selenium levels in toenails and the risk of advanced prostate cancer. *J Natl Cancer Inst* 90:1219-1224,1998.
4. Ripple MO, Henry WF, Randall P et al. Pro-oxidant-antioxidant shift induced by androgen treatment of human prostate carcinoma cells. *J Natl Cancer Inst* 89:40-48,1997.
5. Lands LC, Grey VL, Smountas AA. Effect of supplementation with a cysteine donor. *J Appl Physiol* 87:1381-1385,1997.
6. Bounous G. Whey protein concentrate (WPC) and glutathione modulation in cancer treatment. *Anticancer Res* 20: 4785-92,2000.