

Mushroom Extract Boosts Action of Prostate Cancer Drug

By Greg Arnold, DC, CSCS, August 3, 2006, abstracted from "Phellinus linteus sensitises apoptosis induced by doxorubicin in prostate cancer" printed online July 25, 2006 in the *British Journal of Cancer*

Link – <http://www.nowfoods.com/HealthLibrary/HealthArticles/HealthNotes/M085780.htm>

With an estimated 234,460 new cases each year and over 27,000 deaths each year, prostate cancer remains the number one killer of men. While there is a 100% five-year survival rate if the cancer is found early, that rate plummets to only 34% if the cancer has spread.¹

Research has focused primarily on the ability of nutrition and supplementation, including green tea,² soy,³ and [vitamin E combined with lycopene](#),⁴ to help maintain prostate health. Now a new study⁵ has found that supplementation in the form of mushroom extract may be able to enhance the action of prostate cancer drugs.

Research on mushroom extract has increased in the last decade⁶ due to mounting evidence of its ability to not only significantly inhibit cancer growth,⁷ but to do so with very few side effects or toxicity.⁸ One of the most potent anti-cancer mushrooms is *Phellinus linteus* (PL)⁹ and it is this extract that has been found to help improve the potency of prostate cancer drugs.

In the study, researchers exposed both normal and prostate cancer cells to low doses of either PL (0.5 mg per milliliter), a prostate cancer drug called doxorubicin (2 micrograms per milliliter),¹⁰ or both. While neither PL nor Dox at low doses separately caused cell death, they found that both given together elicited "a significant synergy...in the induction of [cell death]" in the prostate cancer cells but not in the normal prostate cells. They found that the PL and Dox treatment accomplished this by increasing the activity of potent anti-cancer enzymes called caspases.¹¹

For the researchers, "the results indicate that PL, at low doses, can make prostate cancer cells, but not normal prostate cells, susceptible to [cell death by Doxorubicin]."

Greg Arnold is a Chiropractic Physician practicing in Danville, CA. You can contact Dr. Arnold directly by emailing him at PitchingDoc@msn.com or visiting his website www.PitchingDoc.com

Reference:

¹ "What Are The Key Statistics For Prostate Cancer?" posted on the American Cancer Society Website
www.cancer.org/docroot/CRI/content/CRI_2_4_1X_What_are_the_key_statistics_for_prostate_cancer_36.asp?sitearea

² Chung, L. Y., T. C. Cheung, et al. (2001). "Induction of apoptosis by green tea catechins in human prostate cancer DU145 cells." *Life Sci* 68(10): 1207-14

³ Hedelin M. Dietary Phytoestrogen, Serum Enterolactone and Risk of Prostate Cancer: The Cancer Prostate Sweden Study. *Cancer Causes and Control* 2006; 17(2): 169-180

⁴ Limpens J. Combined Lycopene and Vitamin E Treatment Suppresses the Growth of PC-346C Human Prostate Cancer Cells in Nude Mice *J. Nutr.* 2006 136: 1287-1293

⁵ Collins L. *Phellinus linteus* sensitises apoptosis induced by doxorubicin in prostate cancer. *Br Jou Cancer*. Printed online July 26, 2006 doi:10.1038/sj.bjc.6603277

⁶ Oh GT, Han SB, Kim HM, Han MW, Yoo ID (1992) Immunostimulating activity of Phellinus linteus extracts to B-lymphocyte. *Arch Pharm Res* 15: 379–381

⁷ Oh GT, Han SB, Kim HM, Han MW, Yoo ID (1992) Immunostimulating activity of Phellinus linteus extracts to B-lymphocyte. *Arch Pharm Res* 15: 379–381

⁸ Borchers AT, Stern JS, Hackman RM, Keen CL, Gershwin EM (1999) Minireview: mushrooms, tumors and immunity. *Soc Exp Biol Med* 221: 281–293

⁹ Wasser SP (2002) Medicinal mushrooms as a source of antitumor and immunomodulating polysaccharides. *Appl Microbiol Biotech* 60: 258–274

¹⁰ Los M (1997) Cross-resistance of CD95 and drug-induced apoptosis as a consequence of deficient activation of caspases (ICE/Ced-3 proteases). *Blood* 90: 3118–3129

¹¹ Nicholson DW, Thornberry NA (1997) Caspases: killer proteases. *Trends Biochem Sci* 22: 299–306