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Fresh. Simple. Good.

Breast and Prostate Cancer

Emerging research suggests that mushrooms and mushroom extracts may have potent anticancer activity, for both breast and prostate cancer.

Research shows that 30 to 35% of all cancers can be prevented by eating well, being active and maintaining a healthy body weight.¹ As fresh mushrooms are low in calories and fat, in addition to being very versatile and great-tasting, they are a good addition to a healthy eating pattern. They are satisfying as well which may help keep the calories in check and weight at a healthy level.

The Canadian Cancer Society recommends choosing 5 to 10 servings of vegetables and fruit every day to reap the benefits of their disease-fighting antioxidants and phytochemicals. Mushrooms offer nutrients such as beta-glucans and conjugated linoleic acid, compounds that are currently being studied for their chemopreventive potential. Here are some of the latest findings.

Breast Cancer

Breast cancer is the most common cancer in Canadian women. According to the Canadian Cancer Society, in 2006 an estimated 22,200 women were diagnosed with breast cancer. Sadly, 5300 will die of it. One in 9 women is expected to develop the disease in their lifetime and 1 in 27 will die of it.²

But there is some encouraging news.

- A 2006 study conducted at the Beckman Research Institute of the City of Hope in Duarte, Calif., found that the conjugated linoleic acid extracted from mushrooms inhibited the activity of aromatase, an enzyme responsible for synthesis of estrogen. They also found that mushroom extract suppressed the growth of hormone-dependent breast tumors in mice by decreasing both tumor cell proliferation and tumor weight.³
- Stuffing mushrooms were found to be the strongest inhibitors of aromatase activity. Shiitake, white button mushrooms, portabella, crimini and baby button mushrooms also showed significant inhibitory effects.
- A variety of other vegetables including green onion, carrot, bell pepper, broccoli and spinach did not show any significant activity.
- The authors suggest that consuming 3.5 ounces (100g) of mushrooms per day would help suppress breast tumor growth in women. However, much more research,

including human studies, needs to be done before any specific recommendations can be made.

Prostate Cancer

Prostate cancer is the most common cancer in Canadian men. Canadian Cancer Society statistics estimate that 20,700 men were diagnosed with the disease in 2006, with 4200 of those dying from it. One in 7 men will develop prostate cancer during their lifetime, mostly after age 60, and 1 in 26 will die of it.⁴

Here there is also cause for hope.

- The Netherlands Cohort Study looked at the vegetable intake and prostate cancer risk of 58,279 men ages 55-69 years and found a positive association between eating mushrooms and prostate cancer risk.⁵
- Maitake mushroom extracts have been an area of interest for many years. A study published in 2000 in the journal *Molecular Urology*, found that beta-glucans (polysaccharides) extracted from Maitake mushrooms destroyed human prostatic cancer cells in a laboratory setting.⁶
- Selenium is also of scientific interest in prostate cancer risk research. A ½-cup serving of sliced cooked fresh mushrooms is a source of selenium, providing 11% of the Daily Value.*
- In 2003, researchers from The Netherlands Cohort Study found that men with the highest selenium intake had a 31% lower risk of developing prostate cancer.⁷ However, further study is needed to confirm these findings as estimation of dietary selenium can be unreliable.
- Recent results from the Physicians' Health Study conducted at Brigham and Women's Hospital and Harvard Medical School, both in Boston, Mass., noted that higher levels of selenium may slow prostate cancer tumor progression. As well, those who had the highest levels of selenium in their blood were almost 50% less likely to develop prostate cancer during the 13 years of follow-up.⁸

For more information about the nutrition and health benefits of mushrooms as well as some delicious recipe ideas visit Mushrooms Canada at www.mushrooms.ca.

* Approximately 1 cup raw, 8-10 medium white button mushrooms. A half-cup = 4 ounces = 113 grams.

References:

- ¹ Canadian Cancer Society at www.cancer.ca
- ² Canadian Cancer Society. Breast Cancer Statistics at www.cancer.ca.
- ³ Chen S, Sei-Ryang O, Phung S, Hur G et al. Anti-Aromatase Activity of Phytochemicals in White button Mushrooms (*Agaricus bisporus*). *Cancer Res* 2006;66(24):12026-12034.
- ⁴ Canadian Cancer Society. Prostate Cancer Statistics at www.cancer.ca.
- ⁵ Schuurman AG, Goldbohm A, Dorant E and van den Brandt PA. Vegetable and Fruit Consumption and Prostate Cancer Risk: A Cohort Study in the Netherlands. *Cancer Epidemiology, Biomarkers & Prevention*. 1998;7:673-680.
- ⁶ Fullerton SA, Samadi AA, Tortorelis DG et al. Induction of apoptosis in human prostatic cancer cells with beta-glucan (Maitake mushroom polysaccharide). *Mol Urol* 2000;4(1):7-13.
- ⁷ van den Brandt PA, Zeegers MPA, Bode P and Goldbohm RA. Toenail Selenium Levels and the Subsequent Risk of Prostate Cancer: A Prospective Cohort Study. *Cancer Epidemiology, Biomarkers & Prevention*. 2003;12:866-871.
- ⁸ Li H, Stampfer MJ, Giovannucci EL, Morris S, Willett WC et al. A Prospective Study of Plasma Selenium Levels and Prostate Cancer Risk. *J Natl Cancer Inst* 2004;96(9):696-703.