

**White button mushrooms and prostate cancer prevention.** Sheryl Phung\*, Jingjing Ye\*, Gene Hur, Sharon Kwok, Ki Lui and Shiuan Chen. Proceedings of the American Association for Cancer Research, vol. 46, Abs. 1580.

A series of *in vitro* and *in vivo* experiments have been carried out to demonstrate that white button mushrooms can be a chemopreventing agent against prostate cancer. A 20% methanol extract of white button mushrooms has been found to contain phytochemicals that suppress steroid 5alpha-reductase and aromatase. Steroid 5alpha-reductase converts testosterone to dihydrotestosterone (DHT) and has been shown to play an important role in the development of prostate cancer and benign prostate hyperplasia. The use of steroid 5alpha-reductase inhibitors has been found to decrease the incidence of prostate cancer. Aromatase is the enzyme that converts androgen to estrogen. This enzyme is expressed in prostate cancer cells and has been suggested to play a role in androgen-independent prostate cancer. Cell culture experiments involving cells treated with mushroom extract for ten days, have been carried out. Through these experiments, we have revealed that white button mushroom extract has the ability to suppress the growth of hormone resistant prostate cancer cells such as PC-3 and DU145 as well as hormone dependent LNCaP cells in a dose dependent manner. The mushroom extract was found not to affect the proliferation of normal prostate epithelial cells. We have also carried out *in vivo* chemoprevention studies using prostate cancer cell-implanted male athymic nude mouse models. There were two groups of mice gavaged with two different concentrations of mushroom extract and also a pair-fed control group that was gavaged with water. From this *in vivo* study, we demonstrated that our mushroom extract decreased tumor size in a dose dependent manner. Pathology results indicated that there was significant increase in apoptosis compared to the control as well as decrease in cell proliferation. Therefore, our findings on white button mushrooms indicate that the intake of mushrooms could reduce the incidence of prostate cancer. An effective chemopreventive agent should not significantly alter quality of life, and is ideally inexpensive, safe and well tolerated. This prevention method should be readily available and affordable to the general population including underserved populations (\*These authors contributed equally to this work).