Ethyl acetate extract of brown button mushrooms (*Agaricus bisporus*) inhibits prostate tumor growth in LNCaP-bearing xenograft ICR scid mouse model

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ABSTRACT

Standard therapies against prostate cancer have limitations including lack of effect against hormone-refractory tumors and toxic side effects. Dietary anti-cancer compounds have attracted increasing attention in cancer research because of their potential for lower toxic side effects and lower cost. An inverse association between mushroom consumption and risk of some cancer has been observed in some epidemiological studies. No research, however, has been done with brown button mushrooms (*Agaricus bisporus*) in prostate cancer models. We examined the effect of brown button mushrooms against prostate cancer cells in culture. Our preliminary data showed that an ethyl acetate extract of brown button mushrooms (BBEA) very potently inhibited the growth of LNCaP human prostate cancer cell growth (IC_{50} ~0.1mg/ml). The mushroom extract induced formation of H_2O_2 under cell culture conditions (~50μM H_2O_2 produced by 0.1mg/ml BBEA after 6h), suggesting this as one possible mechanism of mushroom extract's anti-cancer activity. In this proposal, we will translate these cancer cell growth inhibitory effects of BBEA to an immunodeficient mouse model (ICR scid mice) bearing LNCaP xenograft tumors. Biochemical approaches will be used to examine tumor cell growth inhibition, induction of apoptosis, and oxidative stress induced by the extract.