

Combination of C.G.F. and Agaricus Blazei Reduces Adverse Effects of Anticancer Drugs

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Chemotherapy with anticancer drugs is associated with serious adverse effects. Nevertheless, it is still widely used in the treatment of cancer, the most common cause of death in Japan. If adverse effects, which are unavoidable concomitants of anticancer drugs, could be reduced, the therapeutic effects of such drugs will be improved. Recently, naturally occurring compounds, rather than synthetic medicinal drugs that symptomatically treats adverse effects of anticancer drugs, have been screened. We have initiated screening of compounds based on *Agaricus blazei*, which has been confirmed to exert various anticancer effects, and Chlorella growth factor (CGF), a physiologically active substance. We describe the results of such screening here in a first report.

[Study Objectives]

A study using mice bearing Sarcoma 180 solid tumor has confirmed that combined use of *Agaricus blazei* and an anticancer drug enhances the therapeutic effects of the anticancer drug. In addition, this type of drug combination reportedly reduces adverse effects in anticancer treatment.

We evaluated reduction of the toxicity of mitomycin C (MMC) by the combination of CGF and *Agaricus blazei* (SCA).

[Method and Experiments]

We conducted an acute toxicity study by intraperitoneally injecting MMC once in ICR/Slc female mice to determine the LD₅₀ (50% lethal dose). In addition, the maximum tolerated dose (highest dose causing minimum toxicity) and non-lethal dose (highest dose causing no death) were determined by the same methods. Prior to MMC injection, SCA 600 or 1,200 mg/kg was orally administered to mice for seven days. Sarcoma 180 solid tumor was subcutaneously transplanted, and SCA was subsequently orally administered for another seven days. A carbon clearance test was performed in surviving mice receiving MMC at a non-lethal dose in the MMC-alone and MMC+SCA groups to determine phagocytic index and corrected phagocytic index, based on which effects on ability to eliminate foreign bodies was evaluated.

[Results]

SCA exhibited the following effects.

- (1) The LD₅₀ was higher in the MMC+SCA 600 and 1,200 mg/kg groups than in the MMC-alone group.
- (2) The survival rate significantly increased in the group treated with MMC+SCA 1200 mg/kg, the maximum tolerated dose.
- (3) Reductions in liver, spleen, and thymus weights improved in the MMC+SCA groups compared

with the MMC-alone group.

- (4) Phagocytic index and corrected phagocytic index significantly increased in the MMC+SCA groups compared with the MMC-alone group.
- (5) WBC decrease, anemia, hepatic impairment, and weight decrease significantly improved in the MMC+SCA groups.

The above findings suggest that SCA is a promising compound for reduction of the toxicity of MMC.

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