



Antiproliferative Effects of *Bacillus coagulans* Unique IS-2 in Colon Cancer Cells

Madempudi RS, Kalle AM. Antiproliferative effects of *Bacillus coagulans* Unique IS2 in colon cancer cells. *Nutrition and cancer*. 2017 Oct 3;69(7):1062-8.

Summary :

The *in vitro* anticancer (antiproliferative) effects of *Bacillus coagulans* Unique IS-2 were evaluated on human colon cancer (COLO 205), cervical cancer (HeLa), and chronic myeloid leukemia (K562) cell lines with a human embryonic kidney cell line (HEK 293T) as noncancerous control cells. The Cytotoxicity assay (MTT) clearly demonstrated a 22%, 31.7%, and 19.5% decrease in cell proliferation of COLO 205, HeLa, and K562 cells, respectively, when compared to the noncancerous HEK 293T cells. Normal phase-contrast microscopic images clearly suggested that the mechanism of cell death is by apoptosis. To further confirm the induction of apoptosis by Unique IS-2, the sub-G₀-G₁ peak of the cell cycle was quantified using a flow cytometer and the data indicated 40% of the apoptotic cells in Unique IS-2-treated COLO cells when compared with their untreated control cells. Western blot analysis showed an increase in pro-apoptotic protein BAX, decrease in antiapoptotic protein, Bcl2, decrease in mitochondrial membrane potential, increase in cytochrome c release, increase in Caspase 3 activity, and cleavage of poly(ADP-ribose) polymerase. The study suggests that *B. coagulans* Unique IS-2 can be more effective in inducing apoptosis of colon cancer cells and can be considered for adjuvant therapy in the treatment of colon carcinoma.
