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## Abstract

# Cytotoxic activities of fermented wheat germ extract on human gastric carcinoma cells by induction of apoptosis

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**Background:** The fermented wheat germ extract (code name:MSC, trade name: Avemar), is a complex mixture of biologically active molecules with potent anti-metastatic activities in various human malignancies. The objective of this study was to examine the in vitro cytotoxic activities of Avemar on 5 human gastric carcinoma cell lines and to test whether the mechanism involves induction of apoptosis. **Methods:** Cytotoxic activities of Avemar on 5 human gastric carcinoma cell lines (SNU-1, SNU-5, SNU-16, SNU-620, MKN-45) were examined using XTT cytotoxicity assay and apoptosis was measured by Sub-G1 fraction on flow histograms and annexin V- and propidium iodide-stained fraction on flow histogram. **Results:** Avemar dose-dependently suppressed the growth of all 5 examined gastric carcinoma cells by more than 90%, with ascending order of IC50 values: SNU-5 (0.37mg/mL), MKN-45 (0.49mg/mL), SNU-620 (0.52 mg/mL), SNU-1 (0.58 mg/mL) and SNU-16 (0.62mg/mL). Flow cytometry of Sub-G1 cells or annexin V- and propidium iodide-stained cells indicated that the growth inhibiting effect of Avemar was consistent with a strong induction of apoptosis. **Conclusions:** Avemar was found to dose-dependently inhibit the growth of gastric carcinoma cells possibly via an apoptosis-dependent pathway and has a potential to be an additive or synergistic effect with cytotoxic agents.

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