MGN-3/Biobran, modified arabinofuranosyl from rice bran, sensitizes human breast cancer cells to chemotherapeutic agent, daunorubicin.


Source

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Abstract

BACKGROUND:

MGN-3/Biobran, a modified form of arabinofuranosyl from rice bran, is a potent biological response modifier (BRM). Our previous studies demonstrated that MGN-3 sensitizes human leukemia cells to death receptor [CD95]-induced apoptosis [Ghoneum M, Gollapudi S. MGN-3 sensitizes human T cell leukemia cells to death receptor (CD95)-induced apoptosis. Cancer Lett 2003;201:41-9]. In this study, we evaluated the chemosensitizing activity of MGN-3 against human breast cancer cells (BCCs) in vitro.

METHODS:

BCCs (MCF-7 and HCC70 cells) were cultured with different concentrations of daunorubicin (DNR) (from 1x10(-9) to 1x10(-6)M) in the presence or absence of selected concentrations of MGN-3 (100-1000μg/ml) for 3 days. Cancer cell survival was determined by MTT assay and drug accumulation was determined by flow cytometry.

RESULTS:

Treatment with MGN-3 increased susceptibility of BCCs to DNR (5.5-fold for MCF-7 and 2.5-fold for HCC70 cells) as compared to BCCs treated with DNR alone. The sensitizing effect of MGN-3 was associated with increased accumulation of DNR in cancer cells.

CONCLUSIONS:
Our data demonstrate that MGN-3 is an effective chemo-sensitizer and may represent a potential novel adjuvant for the treatment of breast cancer.

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