Synergistic apoptotic effect of arabinoxylan rice bran (MGN-3/Biobran) and curcumin (turmeric) on human multiple myeloma cell line U266 in vitro.


Source
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Abstract
The present study was carried out to investigate the synergistic apoptotic potential of arabinoxylan rice bran (MGN-3/Biobran) and curcumin (turmeric) on human multiple myeloma (MM) cell line U266, in vitro. U266 cells were cultured with MGN-3 (50 or 100μg/ml) and curcumin (2.5-10μM) for 3 days. The effects of MGN-3 and curcumin on the growth and survival of the U266 cells were determined by trypan blue, MTT assay, flow cytometry analysis of cancer cell cycle, and apoptosis. Expression of proapoptotic Bax, and antiapoptotic Bcl2 was determined by Western blot analysis. Treatment with MGN-3 alone or curcumin alone caused a dose-dependent inhibition in the proliferation of U266 cells. However, a synergistic effect was noticed post-treatment with both agents that maximized at 100μg/ml MGN-3 plus 10μM curcumin. This synergy was characterized by an 87% decrease in cell number and a 2.6 fold increase in the percentage of apoptotic U266 cells. Cell cycle analysis showed a 53% decrease in the percentage of cells in the G0-G1 phase treated with MGN-3 and curcumin (from 36% to 17%). Analysis of the expression of the pro and antiapoptotic molecules Bax and Bcl-2 revealed synergistic effects of these agents, as the expression of Bcl-2 was decreased and Bax was increased. This resulted in a cellular microenvironment favorable for apoptosis. We conclude that MGN-3 and curcumin synergize in the induction of U266 cell apoptosis. This data may establish the foundation for in vivo studies that could have therapeutic implications.

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