Discriminative Effect of SIM5 and its fractions on normal and cancerous lymphocytes

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It has been previously reported that an herbal preparation named SIM5 has discriminatively toxic effect on cancerous cells but non-toxic for normal human cells cultures in vitro [1]. Regarding the adverse effects of common anticancer drugs, it seems valuable to find anticancer compounds among edible herbs. In this study, the effects of the preparation (and its fractions) on mouse normal resting lymphocytes, normal activated lymphocytes and lymphoma cell line (BCL1) were evaluated and some biochemical analyzes were done.

The chemical analyzes were performed using gas chromatography–mass spectrometry (GC/Mass). The BCL1 cell line and the normal lymphocytes from mouse spleen (resting and Con-A activated) were cultured and incubated with various concentrations of SIM5. MTT test was performed after 48 hours and the cytotoxicity and IC50 were calculated according to MTT absorbencies. The Amicon filtering system was used to prepare the fractions according to relative molecular weight.

The preparation had strong toxic effect on BCL1 (from 0.2-2 mg/ml) and the IC50 was 0.415 mg/ml but it had completely opposite effect on resting lymphocytes i.e. it had induced them to became activated and proliferated. Its activating effect was comparable with Con-A alone. It had not any toxic effect on Con-A activated lymphocytes as well (0.001-2 mg/ml). Similar results were obtained using various fractions of SIM5 designed R100, R50, R30, R10 and R5 according to molecular weight of residues. It seems that effective molecules lie between the molecular weight of 5-30 KDa as the fractions between theses molecular weights had the most toxic effect on BCL1.

Regarding to the observation that this herbal preparation has discriminative effect on lymphoma cells and normal lymphocytes, i.e. toxic for lymphoma cells and stimulating or non-toxic for normal lymphocytes, it seems that this preparation valuable anti-tumor compounds.

Reference

[1] Yaraee, R,; Ghazanfari, T.; Shams, J.; Esmaeili, M.; Jamali, D. *Daneshvar.* **2008,** *15 (73)*, 73–78.