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Could IL-8 be the target for melanoma treatment? An *in vitro* study based on curcumin pre-treatment and IL-8 treatment of human melanoma cell models

Statement of the problem: Our previous studies showed that progesterone, a female sex hormone inhibited mouse (B16F10) and human (BLM) melanoma cell growth significantly *in vitro*. Progesterone action, as shown by Elisarray, was mediated through specific suppression of pro-inflammatory IL-8 cytokine secretion.

Method and Materials: A further experiment involving direct suppression of IL-8 by curcumin pre-treatment (100 μ M), resulted in a decrease of BLM cell growth (29%). Based on our experiments and literature survey, it was hypothesized that IL-8 could be the molecule involved in the growth of melanoma cells. In order to check the role of IL-8 in the regulation of melanoma cell growth, experiments were designed (1) to add IL-8 directly to human melanoma cells (2) to carry out dose-response study of curcumin treatment on melanoma cell growth and (3) to rescue cell growth in curcumin pre-treated melanoma cells by adding various concentrations of IL-8.

Results: Results indicated that IL-8 (1ng/ml) stimulated human melanoma (BLM) cell growth to 114% compared to untreated control cell growth at 100%. Curcumin pre-treatment of BLM cells at 10, 25, 50 and 100 μ M showed a dose-dependent inhibition of melanoma cell growth. Rescue experiments with IL-8 at 1ng, 10ng and 100ng per ml were carried out after curcumin (10, 25, 50 and 100 μ M) pre-treatment of BLM cells. Addition of IL-8 10ng/ml showed a significant rescue of cell growth (69.5%) when added to curcumin 25 μ M pre-treated BLM cells at 59% cell growth. All the experiments were repeated with another human melanoma (1205Lu) cell line. Results were very similar to BLM cells with a nearly complete (95.3%) rescue of melanoma cell growth by the addition of IL-8 100ng/ml to curcumin 25 μ M pre-treated 1205Lu cells at 71.5% cell growth.

Conclusion: Our *in vitro* experiments along with literature survey suggested that IL-8 cytokine could be the molecule involved in the regulation of human melanoma cell growth and hence IL-8 could be considered as a target for melanoma treatment.

Biography

Pandurangan Ramaraj obtained Master's degree in Medical biochemistry from JIPMER and Ph.D. in Biochemistry from Indian Institute of Science, India. His postdoctoral research work in US involved gene and function studies involving transgenic & knockout mice, oncogene transfer into human hematopoietic stem cells and transdifferentiation of murine mesenchymal stem cell. He started teaching career as an Instructor at Cleveland Chiropractic College, Los Angeles before joining Kirksville College of Osteopathic Medicine as an Asst. prof, where currently teaching Medical Biochemistry to D.O. students. He is interested in studying the effect of steroid hormones on cancer using mouse and human melanoma cell lines as model systems.

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