

Is Interleukin-8 A Possible Target For Melanoma Treatment? In-vitro studies based on Steroids, IL-8, Curcumin and active Vitamin-D3 Treatments of Human Melanoma Cell Lines

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Abstract:

Previous clinical studies showed that menstruating females were better protected in melanoma than post-menopausal women and men of any age. In addition, epidemiological studies showed an increased male mortality in melanoma. But these studies did not correlate with steroid status in females. Our in-vitro study showed female sex hormone progesterone significantly inhibited human melanoma cell growth. Further in-vitro study showed that progesterone action was mediated by a specific suppression of pro-inflammatory cytokine IL-8. Our research also showed that addition of IL-8 (1 ng/ml) to melanoma cells stimulated cell growth (117%) and suppression of IL-8 by curcumin (100 μ M) pre-treatment suppressed human melanoma cell growth (26%) in-vitro. This observation prompted us to check the effect of male sex hormones androstenedione (AD) and testosterone (T) on melanoma cell growth. AD and T also suppressed cell growth and IL-8 secretion, but not as significantly as that of progesterone. However, addition of progesterone (10 μ M) along with androgens showed additive effect on the inhibition of melanoma cell growth and suppression of IL-8 secretion. As steroids (P, AD, T) targeted IL-8 for their action, it was decided to check whether vitamin-D3 also targeted IL-8 secretion and cell growth. Active form of vit-D3 (25 μ M) also suppressed IL-8 secretion and cell growth. But, addition of progesterone (50 μ M) along with D3 significantly suppressed cell growth and IL-8 secretion. This brought IL-8 into focus as a key molecule regulating melanoma cell growth. In order to check whether IL-8 was the molecule involved in regulating melanoma cell growth, IL-8 rescue experiment after curcumin (25 μ M) pre-treatment was carried out. IL-8 (100 ng/ml) was able to rescue cell growth completely after pre-treatment with curcumin, suggesting IL-8 was the molecule involved in regulating melanoma cell growth. Literature also suggested important role for IL-8 in regulating melanoma cell growth. Conditional expression of IL-8 in nude mouse by Dr. Singh et al., indicated in-vivo role of IL-8 in melanoma growth and metastasis.

Conclusion: Both, in-vitro and in-vivo studies suggested an important role for IL-8 in regulating melanoma growth and metastasis. So, IL-8 could be targeted to arrest melanoma growth and metastasis in-vivo. Hence, IL-8 could be a potential 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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