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Anti-inflammatory drug resistance in breast and colon cancer stem cells: Preclinical leads

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Abstract

Breast and colon cancer together represent major organ site cancers in women. Current treatment options include pathway selective targeted therapy in these cancer subtypes. Additionally, anti-inflammatory drugs have documentedpreclinical and clinical efficacy. Long-term use of these therapeutic options are frequently associated with systemic toxicity, acquired tumor resistance and emergence of drug resistant cancer stem cells. Relatively non-toxic natural products may offer testable alternatives against therapy resistant cancer subtypes. Recent experimental approaches utilize clinically relevant models for breast and colon cancer where gain of expression of human epidermal growth factor receptor-2 (HER-2) oncogene in breast or loss of expression of adenomatous polyposis coli (Apc) tumor suppressor gene in colon represent primary genetic defects and drive carcinogenic process,. Cellular resistance to the non-steroidal anti-inflammatory drug Sulindac selects and enriches drug resistant cancer stem cells. Natural products inhibit the growth of cancer stem cells via downregulated expression of stem cell specific cellular and molecular markers. Collectively, this evidence validates a mechanistic experimental approach to evaluate and prioritize efficacious natural products as agents that target cancer stem cell population. This presentation will provide an overview of clinically relevant rationale for preclinical approaches, published evidence for development of reliable models for breast and colon cancer stem cells, potential clinically translatable mechanistic leads for natural products as testable alternatives for therapy resistant cancer, and future prospects focused on extension of present approaches that are appropriate for patient derived cancer tissues. Collectively, these aspects provide evidence for potential clinical translatability of preclinical data.

Biography

Nitin Telang earned his PhD degree in 1974 from University of Poona, India, and obtained his post-doctoral training (1976-1985) in the USA at University of Nebraska, American Health Foundation, New York, and Memorial Sloan-Kettering Cancer Center, New York. He serves as Director, Cancer Prevention Research Program at Palindrome Liaisons Consultants, New Jersey. He has published more than 100 peer-reviewed papers and serves on the editorial boards of World Academy of Sciences Journal, International Journal of Oncology, Oncology Reports, and as an associate editor for BMC-Complementary & Alternative Medicine.

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