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Extracts from Graviola transcriptionally inhibits the expression of receptors in breast cancer cells

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Statement of the Problem: Annonaceous acetogenins extracted from plants of the genera *Annona*, which includes the species *Annona muricata* (also known as Soursop, Graviola and Guanabana) are known to have anti-cancer properties. Several published articles, dating back as far as the 1990's, have shown that acetogenins extracted from the leaves, fruit and seeds can kill breast, prostate, pancreas, skin and liver cancer cells *in vitro* and *in vivo*. Cancer Research UK has mentioned that there have not been any large scale studies in humans on the use of Graviola for cancer therapy and no substantial evidence of its anti-cancer activity exists. Therefore our aim is to identify and purify the most active anti-cancer product in crude soursop extracts. We will then test these products on normal and cancer cell lines.

Methodology & Theoretical Orientation: An extract was prepared from crushed soursop seeds; it was then subjected to flash chromatography. Six separate extract fractions were identified. These fractions were tested for bioactivity against the breast cancer cell line 21NT and a normal cell line, HMEC.

Findings: We found that fractions II and III were approximately 10^6x more active against cancer cells. HPLC was then used to purify the active compound from fraction II. The HPLC purified compound was then used to treat breast cancer cells for 48 hours, RNA and protein was extracted and used to identify targets that were modulated by the compound.

Conclusion & Significance: This compound was shown to be a transcriptional inhibitor of EGFR and LDH, both of which are important for the rapid growth of cancer cells.

Biography

Terry Roberts obtained his PhD in Biotechnology from Kings College London. Currently, he is working within the field of Human Molecular Genetics and Cancer for over 20 years. He made significant contributions towards research into several cancer types including neuroblastoma, melanoma, leukemia, prostate and breast cancer. He was involved in the cloning and analysis of the novel genes *GFI-1, NB4S, TRNG10, PCTA-1 HGRG8*, and *TTC4*. He had an extensive knowledge of cancer genetics in the field of natural medicine and translational biology to help elucidate pathways through which natural products work.

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