

Cytotoxicity of Water and Ethanol Extracts of *Morinda citrifolia* (L.) Against Normal Epithelial and Breast Cancer Cell Lines

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Abstract

Morinda citrifolia has been used by Polynesians throughout recorded history in a variety of medicinal preparations and as a famine food. In recent years, interest in noni has grown to such an extent that a large and lucrative market now exists. Noni has been promoted as a treatment for a vast array of medical conditions ranging from cancer to sexual dysfunction. Relatively few studies have ever been done concerning the efficacy of noni in these conditions. None have been done comparing the effects of noni exposure on cancer cells and corresponding normal cells of the same tissue type. In this study, the cytotoxic effects of water and ethanol extracts of whole noni fruit, pulp, peel and seed are studied on HMEC (Clonetics Human Mammary Epithelial Cells), MCF-7 breast carcinoma and an invasive variant of MCF-7(MCF-7i), which was developed in our lab. The XTT protocol from Boehringer Mannheim and the ToxiLight and ViaLight HS protocols from BioWhittaker were used to determine the cytotoxicity of noni extracts on all three cell lines. Initial data indicate that noni demonstrates general cytotoxicity and this effect was similar on normal breast epithelial HMEC cells, non-invasive and invasive breast carcinoma cells MCF-7 and MCF-7i.

Significant noni medical research papers

Screening of indigenous plants for antihelmintic action against human *Ascaris lumbricoides*: Part II. Indian J Physiol Pharmacol 1975 Jan-Mar 19.

Analgesic and behavioral effects of *Morinda citrifolia*. Younos C. et al. Planta Med 1990 Oct; 56(5):430-4.

Induction of normal phenotypes in ras-transformed cells by damnacanthen from *Morinda citrifolia*. Hiramatsu T. et al. Cancer Lett 1993 Sep 30;73(2-3); 161-6.

Anticancer activity of *Morinda citrifolia* (noni) on intraperitoneally implanted Lewis lung carcinoma in syngenic mice. Hirazumi A. et al. Proc West Pharmacol Soc 1994;37:145-6.

Immunomodulation contributes to the anticancer activity of *Morinda citrifolia* (noni) juice. Hirazumi A. et al. Proc West Pharmacol Soc 1996;39:7-9.

Stimulation of uv induced apoptosis of human fibroblast UVr-1 cells by tyrosine kinase inhibitors. Hiwasa et al. FEBS Lett 1999 Feb 12; 444(2-3): 173-6.

An immunomodulatory polysaccharide-rich substance from the juice of *Morinda citrifolia* (noni) with antitumor activity. Hirazumi A. et al. Phytother Res 1999 Aug;13(5) 380-7.

Cancer preventive effect of *Morinda citrifolia* (Noni). Wang et al. Ann NY Acad Sci 2001 Dec; 952:161-8.