

# Herbal Anti-Cancer Drugs: A Better Way to Cure the Disease

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## Introduction

Bio-prospection is an advantageous process of generating income for developing countries and at the same time it can provide incentives for the conservation of biological resources and bio-diversity. In addition, it can lead to the development of new products like medicines. It has led to explore potent anti-cancer drugs. So far seven plant-derived anticancer drugs have received Food and Drug Administration (FDA) approval for commercial production. Some of them have been mentioned below:

### Taxol

A chemical discovered in the Pacific Yew tree (*Taxus brevifolia*) is the first drug of choice in several tumorous cancers including Breast Cancer.

### Vinblastine and Vincristine

A chemical discovered in the *Madagascar periwinkle* in the 1950s. Vinblastine is the first drug of choice in many forms of leukemia and since the 1950's it has increased the survival rate of childhood leukemias by 80%. Vincristine is another anti leukemic drug discovered in the *Madagascar periwinkle*.

### Vindesine

Vindesine has a serum half-life of about 24 hours and is administered at a dose of 3 milligrams per square meter of body surface. Its toxicity and side effects are similar to those of vinblastine. Vindesine, is marketed under the names Eldisine and Fildesin are used mainly to treat melanoma and lung cancers (carcinomas) and with other drugs to treat uterine cancers.

### Topotecan and Irinotecan

It has been approved by the FDA for the treatment of ovarian and

small cell lung cancers. It is currently in clinical trials, either alone or in combination with other anticancer drugs, for several types of cancer. Topotecan is an analog of a plant alkaloid discovered in the Chinese tree species named *Camptotheca acuminata*. Irinotecan is another chemical analog developed from plant alkaloid discovered in the same tree *Camptotheca acuminata*. It has been approved by the FDA for the treatment of metastatic colorectal cancer. It is currently in clinical trials for a variety of other cancers.

### Etoposide and Teniposide

It is a semi synthetic derivative of a plant chemical epipodophyllotoxin discovered in the Mayapple plant family (*Podophyllum peltatum*). Teniposide is also semi synthetic derivative of a plant chemical found in *Podophyllum peltatum*.

### Colchicine

It is a water soluble alkaloid. It blocks or suppresses cell division by inhibiting mitosis. Specifically, it inhibits the development of spindles as the nuclei are dividing. Normally, the cell would use its spindle fibers to line up its chromosomes, make a copy of them, and divide into two new cells with each daughter cell having a single set of chromosomes. With colchicine present, the spindle fibers don't form, and so the cell cannot move its chromosomes around. Because cancer cells divide much more rapidly than normal cells, cancers are more susceptible to being poisoned by mitotic inhibitors such as colchicine, paclitaxel, and the Vinca alkaloids.

Screening herbal wealth by phyto chemistry or pharmacognosy has given numerous benefic inferences for human welfare and I hope many young researchers from various applied fields would take up the task to explore and utilize the obscure treasure of nature.

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