

NATURAL PRODUCTS IN ANTICANCER THERAPY

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ABSTRACT: An attempt has been made to review some medicinal plants used for the prevention and treatment of cancer. Plant derived compounds have played an important role in the development of several clinically useful anticancer agents. Cancer is a major health problem in both developed and developing countries. Cancer is the second leading cause of death after cardiovascular disease. Due to high death rate associated with cancer and serious side effects of chemotherapy and radiation therapy, many cancer patients seek alternative and/or complementary methods of treatment. India, which are being used traditionally for the prevention and treatment of cancer.

Keywords: Medicinal plants, Cancer, Chemotherapeutic, MAO, Phytochemicals.

I. CANCER

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body.(1)

Anticancer Drug

The Drug that are used in inhabiting the abnormal cell growth or killing the cancer cells.

It is also called as Antineoplastic Drug.(2)

MODE OF ACTION OF NATURAL ANTICANCER DRUGS

Block nucleic acid (DNA, RNA) Biosynthesis.



Directly Destroy DNA and RNA and inhibit the reproduction.



Interfere transcription and block DNA Synthesis.



Interfere protein synthesis and function.



Influence hormone homeostatis.(3)

Recent Advance Of Natural Anticancer Agents

1. Natural agents have low toxicology.
2. The MOA of recent natural agents are.
Acts on DNA bases
Intercalation of DNA
Induction of Apoptosis
3. Many new species are investigated to find out new agents for treatment of cancer
4. produce good therapeutic agents with low toxicity.

1. Aerva lanata



B.source : Aerva lanata L.

Family: Amaranthaceae

Chemical Constituents: Alkaloids, Flavanoids
Moa : inhibition of cellular level of NADPH and glucose level.(4)
Uses:- Anti-tumor ,Hepatoprotective, Anti-dibetics

2. Spiny amaranth



B. Source: Amaranthus spinosus
Family : (Amaranthaceae)
Chemical constituents : seven compounds, including two diglycoside flavonoides hesperidin.
Mao : decreasing the nutritional food volume and arresting tumor growth.(5)
Uses : Anti-cancer

3. Garlic



B.source : Allium sativum
Family : Liliaceae
Chemical constituents : Allicin,mucilage,albumin,alpha-glutamyl peptides .
Mao: garlic seems to detoxify chemical carcinogen and prevent carcinogenesis and also inhibit the growth of cancer cell.(6)

Uses : various cancer,brest cancer,prostate cancer.

4. kalmegh



B.source : Andrographis paniculata
Family : Acanthaceae

Chemical constituents : diterpene lactone and flavones,lactone-andrographolide.
Mao - Cell-cycle arrest at G0/G1 phase through induction of cell-cycle inhibitory protein p27 and decreased expression of cyclin-dependent kinase 4 (CDK4). Increased proliferation of lymphocytes and production of interleukin-2, enhance the tumor necrosis factor-alpha production and CD marker expression.(7)
Uses: Antitumour, anti-hiv, antifertility

5. Amla



B.source : Embilica officinalis
Family: Euphorbiaceae
Chemical constituents : galic acid,chebulinic acid,ellagic acid.
Mao : Reduce the in Ascitic volume and solid tumor growth, significantly reduced the solid tumors and prolonged survival time. Inhibit the cell cycleregulating enzyme, Cdc25 phosphatase.(8)
Use : Anticancer and antioxidant activity.

6..Ginger



B.source: Zingiber officinale

Family: zingiberaceae

Chemical constituents : gingirol,polyphenols such as 6-gingirol,8-gingirol,and 10-gingirol.

Mao : Rapid and strong increase in intracellular calcium and a 20-40% decrease in the mitochondrial membrane potential. Ser-15 of p53 was phosphorylated. This increase in p53 was associated with 90% decrease in Bcl2 whereas no effect was observed on Bax. Inhibitor of p53, pifithrin- α , attenuated the anti-cancer effects and apoptosis was also not observed in the p53 (neg) SKOV-3 cells. (9)

Use : colan cancer.

II. CONCLUSION

- Plants have been a prime source of highly effective conventional drugs for the treatment of many forms of cancer.
- The actual compound isolated from the plant may not serve as the drug but leads to the development of potential novel agents.
- Natural agents are proving to be an important source of novel inhibitors & have the potential for development into selective anticancer agents.

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