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A review on anti-cancerous phyto medicines

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Abstract

Cancer is a disease that involves uncontrolled cell growth has a potential to invade and spread in other parts of the body. They form neoplasm or a tumor a group of cells often converts into a mass or lump. Drugs which are used to treat it are known as antineoplastic or anti cancerous agents. There may be different causative factors which lead cancer. Hepatitis B virus, cigarette smoking, benzopyrene, asbestos, exposure of radiations have Cancer originating ability. Various naturally occurring as well as synthetic drugs have been investigated to treat it, Chemotherapy and radio therapy are frequently used today. But due to their huge side effects researches are going on. Among these use of naturally occurring anti cancerous drugs are rather more safe and cost effective.

Keywords: Antineoplastic, Metastatis, Carcinoma, Sarcoma

1. Introduction

[1] Uncontrolled growth of cells in the body or proliferation of cells in any body organ which leads to malignancy is known as 'cancer'.

In addition cancer cells have other ability of invasion metastasis. They circulate in other parts and further develop. Carcinogenic virus hepatitis 'B' causes liver cancer. Chemicals, biological or environmental agents are also responsible for producing cancer. Oncogenes have an ability to disturb the normal cell growth mechanism. Protein kinase is the culprit for such activity. Some hydrocarbons, asbestos, exposure of UV radiation can damage DNA causing mutation leading skin cancer.

Cancer is divided into two classes (i) malignant tumor which arises from epithelial cells is known as 'Carcinoma' and (ii) those arising from connective tissues is called 'sarcoma'. It is a Lethal disease, it kills annually 3500 per million population around the world. Various chemical drugs and radiation therapy are the major part of treatment. More than 1500 drugs are in process, 500 drugs are under clinical trial.

Enough evidences [2, 3] are there having a proof of use of plants to cure this fatal disease. Podophyllum was the first plant to be used as anticancer drug about 2000 years ago in ancient china. The alkaloids of vincorosea i.e. vincristine and vincalukoblastine are found to be effective in certain forms of neoplastic condition. Camptothecin, isolated from camptotheca plant is used to treat cancer in Ethiopia. Due to adverse effects of 'chemotherapy' and 'Radiation therapy' scientists have been compelled to investigate other options like evaluation of naturally occurring anti cancerous agents.

Material and Method

Today number of plants, microorganisms and dietary sources are there which function as anti-cancerous agents. A deep literature survey was carried out. Which revealed that various plants and microbes origin bioactive constituents play a vital role to cure this life threatening disease. Some of these are listed below.

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Table 1: Plant Originated Anticancer Drugs [4-13]

S. N.	Plant Name	Natural Drug	Use in Disease
1.	Vinca rosea (china)	Vincristine and vincalokoblastin (1958)	Hodgkin's disease, breast cancer, leukemia
2.	Camptotheca acuminata	Camptotheca (1966) Topotecan	Anticancer activity
3.	Podophyllum peltatum	Podophyllotoxin (1981)	Lung carcinoma
4.	Taxus bravifolia	Taxol Taxotere (Docetaxol paclitaxel).	Uterus cancer
5.	Brucea antidysenterica (Ethiopia)	Brucertine	Tumor
6.	Xanthium spinosum	Xanthatin, Des acetyl xanthiminol	Exhibit anti proliferate activity
7.	Xanthium strumarium	Xanthumin, xanthanol, Tomentosin, Xanthatin	Leukemia, inhibit cell proliferation
8.	Xanthium indicum	Xanthanol, xanthumin	Same
9.	Sphaeranthus indicus	Dihydroxy frullanolide	-//-
10.	Artemisia arruna	Artemisinin, poly methoxy flavonoids	Induces apoptosis

Table 2: Microorganism derived Anticancer Agents [14-17]

S. N	Microorganism	Drug	Disease
1.	Streptomyces supp.	Actinomycin	Sarcoma, germ cell tumor.
2.	St. verticillus,	Sleomycin	Germ cell, cervix, neck
3.	St. caespitosus	Mytomycin	Gastric, colorectal, anal and lung cancer.
4.	St. pneuceticus,	Doxorubiein	Lymphoma, breast, ovarian cancer,
5.	St. pneuceticus,	Epirubiein,	Breast and Leukemia.

Table 3: Marine Derived Anticancer Agents [18-20]

S. N	Name of Drug	Source	Compounds	Activity
1.	Psammaplina	Verongid sponge	Alkaloid	Inhibition of amino peptidase N
2.	Cephalostatin	Worm (Cephalodiscu-s gilchristi)	Steroid	Apoptosis and increased mitochondrial matrix density
3.	Chondropsin- A	Sponge	Macrolide	<i>In vitro</i> inhibition of V-Atpase enzyme
4.	Dihydro-thryisiferol	Algae	Triterpene	Enhance apoptosis, induction in estrogen negative breast cancer cells
5.	Lame llarin 'D'	Molusc (lamellaria)	Alkaloid	Potent inhibition of tropisomerase I
6.	Cortisatin 'A'	Sponge (corticium simplex)	Alkaloid	Selective inhibition of angiogenesis.
7.	Bryostation- 1	Bryozoan	Macrolide	Apoptosis by PKC dependent release TNfx

Table 4: Dietary Source as Anticancer Agents [21-24]

S. N.	Botanical Name	General Name	Active constituents
1.	Carica papaya	Berries	B- crytoxanthine
2.	Glycyrrhiza glabra	Licorice root	Glycyrrhizin
3.	Cannabis sativa	Hemp	Cannabinol
4.	prunus armeniaca	Apricot	Carotenoid
5.	Zinziber officinalis	Tuber	Gingerol
6.	Piperinigrum	Black pepper	Piperine
7.	Crocus sativus	Saffron	Carotenoid
8.	Capsaicum annum	Red chilli	Capsaicin
9.	Daucus carota	Carrot	B- carotene
10.	Prunus dulcis	Almond	Morin
11.	Aloe arborescen	Aloevera	Emodin
12.	Curcubita moschata	Pumpkin	B- carotene
13.	Azadirachta indica	Neem	Poly phenols.

Result and Discussion

The above described naturally occurring drugs have potential anticancer activity. Vincblastine, vincristine and podophyllotoxin isolated from vincarosea and podophyllum are well established anticancer drugs are being used from ancient time. Xanthitin, Xanthumin and Xanthanol are sesqui terpenoidal lactones isolated from various Xaouthium species have investigated and found to be effective against cancerous growth. On the other hand some of the antineoplastic drugs like candropsin A and cortistatin A have been obtained from marine species, algae, sponge are being frequently used to cure various stage of cancer. Some dietary sources are also rich from phytochemicals enable our immune system to fight against the diseases.

Conclusion

From the above observation it is clear that now the time has come to rely on our rich heritage of flora and fauna to eradicate variety of ill health causative factors by applying naturally occurring drugs. By which we can boost our immune system as well as avoid harmful effects of chemo and radiotherapy. More investigations and clinical trials are necessary to improve and establish this line of treatment.

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