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HERBAL MEDICINES AS CANCER TREATMENT

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ABSTRACT

. Cancer actually refers to a group of many related diseases that all have to do with cells. These cells tend to grow without control and exhibit an inadequate, inappropriate blood supply. Also, there is a core of cells subjected to microenvironmental stresses, which possess lower apoptotic potential through genetic alterations and therefore render them resistant to apoptosis. Cancer is among the leading causes of death in the world where the figures of cancer patients are increasing day by day. Cancer is a major public health problem whose estimated world new incidence rate is about 6 million cases annually or this makes it rank second after cardiovascular diseases as cause of deaths. Chemotherapy still remains as the main treatment mode for various cancers. Several synthetic anti-cancer drugs are available; however, its clinical use is limited by its side effects and drug interactions being a major drawback in their clinical use. Most currently used chemotherapy drugs against cancers are found to develop resistance, show non-selective toxicity towards normal cells and thus limit themselves through dose-related side effects. Therefore, cancer therapy and drug development for this disease remains one of the most serious tasks in clinical practice. On other hand plants could be a very good source bearing extremely valuable biologically active natural products which can have commercial usefulness.

Keywords : Cancer, Medicinal Plants, , Chemotherapy, Allopathic Drugs, Cancer Cell Lines.

INTRODUCTION

There are many trillions of small cells that make up our bodies and each one of them is a separate living organism. Normal cells in the body grow and multiply for a while, then stop dividing and growing. Afterwards, they only reproduce only enough to replace the ones that are damaged or die off. When this replicating process goes out control, it's called cancer. This abnormal growth and division is brought about by the mutation of these cells' DNA (deoxyribonucleic acid) which serves as an instructional material for cellular function as well as determining its characteristics. Cell DNA can be defective or damaged through various ways. For instance, environmental causes like exposure to tobacco smoke can set off a series of reactions resulting in faults within cell DNA leading to cancerous conditions. On the other hand, imperfect gene makeup may be inherited from your mom and dad. Sometimes when cancer cells divide themselves repeatedly they form into a lump known as tumor. Hormone therapy etc.Treatments

currently available have made significant strides Cancer symptoms are caused by tumours that pressurize, grind and destroy surrounding non-cancerous cells and tissues.1 Possible treatment modalities, which depend on the stage or type of cancer, include: Surgery; Radiotherapy; Chemotherapy; Biological therapy; Hormone therapy etc. Although chemotherapy or radiation therapy has a number of traumatic side effects, there are significant improvements in current treatments for patients diagnosed with cancer and these treatments are associated with an increased survival rate of patients. Unpleasant side effects like such as fatigue, sleep disturbance, appetite loss, hair loss, sore mouth, changes in taste, fever and infection, anxiety, depression, nausea and vomiting sometimes accompany chemotherapy; these effects can be difficult to ameliorate or manage well enough to avoid serious consequences for the patient's quality of life (QOL) and Cancer patient's QOL can be significantly impaired by chemo side effects. Other harmful effects of these treatment are also possible viz. second cancers after chemotherapy, hormonal and reproductive problems, immune system effects on the immunologic system , heart disease leading to cardiomyopathy and arrhythmias , kidney damage leading to renal failure , urinary bladder dysfunction , gastrointestine pace loss s low transit time resulting in diarrhea ional disorders causing constipation with straining ,, neurologic changes: peripheral neuropathy , cerebellar ataxia , encephalopathy ; psychological disturbances: anxiety , psychotic disorder related to delusions ; etc.,2-3 Never give up hope because there is always something you can do about it. Complementary and alternative medicine therapies not utilizing known anti- cancer drugs or using unconventional approaches have been given their own cancer classification called alternative therapies or systems like body-based, energy-based or mind-body interventions." (1,2,3)

HERBAL DRUG HAVING ANTIPROLIFERATIVE POTENTIAL

ADIANTUM VENUSUTUM :

Adiantum venusutum (Adiantaceae) primitives are extremely valuablein the treatment of tumor. 200-300mg/kg showing anticancer activity onEhrlich Acarcinoma were examined by the phytochemicals, terpenoids,flavonoids, saponins and their presence within the pet ether andethanolic extracts obtained from leaves and stem of Adiantuvenusutum. The ethanol extract of A. venustum Don. (EEAV) recorded significant anticancer and antioxidant activity due to its higherlevels of triterpenoids and flavonoids. It is also found that EEAV significantly reduced the elevated levels of lipid peroxidation andthereby it acts as an antitumour agent. EEAV did not show any toxicityup to the dose of 2000 mg/kg. From aerial parts of A. venustum, there were isolated normethyl lupine- type and lanostane type triterpenes.Spectral data analyses had confirmed their structures as 30-normethyllupine-20-one; 30-normethyl olean-3-one-30-betol; and lanost-20(22)-ene-30-ol were identified. A triterpenic ether named adiantulanostene ether was obtained from A. venustum. (5,6)

ABELMOSCHUS MOSCHATUS :

Antiproliferative effects were found on the human cell lines Y79 (retinoblastoma) and para-aortic COLO-205 from two of the most frequently used plant-based preparation solvent systems. This effect stems from a range of flavonoids included in the extract. The flavonoids were identified as the active principles. The concentration of 200 µg/ml was found effective for the antiproliferative activities of the seed extracts AMS-IV and leaf extracts AML-IV of A. moschatus. The transformed cell line in question was used to calculate at which concentration the extract is cytostatic and inhibits OD level. The aqueous seed extract (AMS-I) exhibited radical scavenging activity against 1,1-Diphenyl-2-picrylhydrazyl (DPPH-), hydrogen peroxide-, hydroxyl radical, superoxide, and lipid peroxidation-mediated cell proliferation. (7)

ASPIDOSPERMA TOMENTOSUM :

The antiproliferative activity of the terpenoids and alkaloids from crude dichloromethane (CHD) and crude hydroalcoholic extract (CHE) extracts of Aspidosperma tomentosum (Apocynaceae) twigs and aerial part was evaluated against five human cell lines: K562 (leukaemia), MCF7 (breast), NCI ADR.Res (breast multidrug resistant) NCI460 (lung) and UACC 62 (melanoma) in a dose dependent fashion. The extracts were tested at concentrations between 15.6 and 125µg/ml. A graded inhibition was seen with increasing concentration for practically all axes of the extract. The concentration dependent growth inhibition was found in both the crude extracts in case of MCF7, UACC62, NCIADR, and NCI460. But significant cytocidal activity (46%) was seen only in case of MCF7 cells with CHD when used at 125µg/ml**. (8)**

ANEMOPSIS CALIFORNICA :

Three different extract conditions of four different parts (bracts, leaves, roots and stems) of Anemopsis californica (Saururaceae) were evaluated for their effect on the growth and migration of human colon cancer cells, HCT-8, and the breast cancer cell lines Hs 578T and MCF-7/AZ. It was noted that up to 200 µg/ml were non toxic to the other cells and the cell viability was maintained. And their Monoterpenoid compounds containing α-pinene, myrtenol and 1,8-cineole) as well as phenylpropanoids such as methyleugenol, isoeugenol and elemicin which are extracted from herbs showed a potential inhibiting effect of such forms of cells as AN3CA and HeLa in vitro (or). In these cases, the IC50 values were 0.056% and 0.052% (v/v) for root oil against AN3CA cells or HeLa respectively. These contain α-pinene (1.9%), β-phellandrene (1.6%), 1,8-cineole (2.5%), piperitone(11.5%), 6.9%, 4.6% (E)-caryophyllene and 53%. In terms of percentage distribution in absolute amounts within one plant for example mentioned above here is how much they comprise: they consist (in plant roots) of 55% methyleugenol; 13% thymol and 5% piperitone.(9)

ALANGIUM SALVIFOLIUM :

Alangium salviifolium seeds, flowers, roots and leaves showed notable anticancer activity using their ethanolic, chloroform, alcohol and distilled water extracts against Ehrlich Ascites Carcinoma (EAC) in mice at the doses of 10 mg/kg body weight. In these extracts phytoconstituents like sterols, glycosides, saponins, carbohydrates, alkaloids, flavonoids, tannins, proteins and triterpenoids have been found. Anticancer activities of A. salvifolium chloroform extract are possibly attributed to alkaloids, phenolic compounds, flavonoids and terpenoids. Various flavonoids including quercetin and its glycosides or kaempferol also possess anti-tumor properties. They modulate signaling pathways involved in tumor growth by stimulating apoptosis in cancer cells line. Moreover they stimulate human peripheral blood lymphocyte proliferation and T-cell such as IL-2 dependent proliferation (in vitro). (10)

Figure 1

ACORUS CALAMUS :

Bioactive substances found in some essential oils, such as β-asarone (46.78%), β- and β-pinene (both 0.06%), [E]-caryophyllene (0.11%), β-elemene (0.39%), farnesol (11.09%), methyleugenol (6.10%), and linalool (0.41),
The anticancer activity of ocimene (0.7%), aromadendrene (0.26%), and camphor (0.03%) from Acorus calamus (Araceae) was determined and tested in MDA-MB-435S and Hep3B cell lines. At 30 µg/ml, the plant exhibits anti-tumor effects. The ethanolic extract of A. calamus rhizomes was used to separate sesquiterpenes, phenylpropanoid, and other compounds, and their potential anticancer properties were assessed. At doses of 250–500 mg/kg, the dried aerial portion of A. calamus exhibited antiproliferative action in its ethanolic extract. In male wistar rats, A. calamus also exhibits effects on the oxidative stress, toxicity, and cell proliferation response brought on by nickel chloride (NiCl2). NiCl2 (250 µmol/kg body weight/mL) improved decreased glutathione levels in the kidney. (14)

AMOORA ROHITUKA :

The triterpene acid known as amooranin (AMR) was extracted from the petroleum ether, dichloromethane, and ethanol fraction of Amoora rohituka stem bark (Meliaceae). The AMR-related mechanism of cell death
cytotoxicity in the drug-resistant breast cancer cell line MCF-7/TH, human mammary carcinoma MCF-7, and breast epithelial MCF-10A cell lines. AMR IC50 values for MCF-7, MCF-7/TH, and MCF-10A cells varied from 3.8 to 6.9 µg/ml. The increase in caspase-8 and total caspase activity coincided with the development of apoptosis in AMR-treated cells. At doses of 1-8 µg/ml, AMR activated caspase-8 in 40.8-71% MCF-7, 28.5-43.2% MCF-7/TH, and 4-32.8% MCF-10A cells. It was determined whether it could overcome multidrug resistance in human leukemia and colon cancer cell lines. Multidrug-resistant leukemia (CEM/VLB) and colon cancer (SW620/Ad-300) cell lines' AMR IC50 values. (17)

ARNEBIA NOBILIS :

The beta-dimethyl acryl shikonin found in the roots of Arnebia nobilis (Boraginaceae) has anti-cancer properties that include inhibiting the advancement of the cell cycle during the G1 phase, reducing the expression of PCNA, CDK 4, and Cyclin D, inhibiting the transcriptional level of bcl2, and increasing

caspase-3 activity. Isolated from A. nobilis roots, ARNebin inhibits rat walker carcinosarcoma, although the stem and leaves showed no signs of activity. (19)

AEGLE MARMELOS :

Swiss albino mice with Ehrlich ascites carcinoma were used to study the hydroalcoholic leaf extract of Aegle marmelos (AME) (Rutaceae). The extract's anticancer effect is attributed to the presence of skimmianine.

The extracts of Aegle marmelos contained butylp-tolyl sulfide, 6-methyl-4-chromanone, and 5-methoxypsoralen, which were found to be able to inhibit the proliferation of human tumor cell lines in vitro. These cell lines included leukemic K562, T-lymphoid Jurkat, B-lymphoid Raji, erythroleukemic HEL, melanoma Colo38, and breast cancer MCF7 and MDA-MB-231. According to the AME's acute toxicity research, the medication was safe up to a dose of 1750 mg/kg b. wt. The endophytic fungus Bartalinia robillardoides (strain AMB-9) that produces taxol was isolated from the organic extract of A. marmelos's bark, leaves, and roots. It possesses potent. (22)

ALLIUM SATIVUM :

Garlic-derived organosulfur compounds (OSCs), which are generated from the aqueous extract (GAE) of the aerial part and bulbs of Allium sativum (Alliaceae), have anti-cancer properties that suppress cancer growth and cause cell cycle arrest.
and produce reactive oxygen species (ROS) in the (HeLa) cell line. Additionally, it was shown that increased GAE concentrations inhibited the proliferation of lymphocytes. S-allylmercaptocysteine (SAMC), a derivative of garlic, suppresses growth, arrests cells in G2-M, and produces apoptosis in human colon cancer cells by stopping the cells in mitosis and initiating the caspase-3 and JNK1 signaling pathways that cause apoptosis. In mice with L5178Y lymphoma, allicin, a key component of garlic, exhibits antitumoral action. Moreover, intact garlic cloves have organic selenium compounds and steroidal saponins that may have anticancer properties. The primary compound of selenium. (23)

BIOPHYTUM SENSITIVUM :

At a dosage of 0.1 mg/ml, it was also shown that an alcoholic extract of Biophytum sensitivum (Oxalidaceae) leaves was cytotoxic to L929 cells grown in vitro. At 0.5 mg/ml, the extract proved 100% toxic to Ehrlich ascites and Dalton's lymphoma ascites (DLA). carcinoma cells (EAC). When B. sensitivum was incubated with B16F-10 cells, apoptotic bodies were seen and DNA fragmentation was triggered. In lungs with metastatic tumors, B. sensitivum increased STAT-1 expression while suppressing MMP-2 and MMP-9 expression. Treatment with B. sensitivum also decreased the expression of IL-6, IL-1β, IL-7, and granulocyte monocyte-colony stimulating factor in the lungs of patients with metastatic tumors. The anticancer effects of 100 and 200 mg/kg b. wt. of the aqueous extract of B. sensitivum (AEBS) leaves. (26)

BETULA UTILIS :

Betulinic acid, also known as pentacyclic lupane-type triterpene (3β-Hydroxy-lup-20(29)-en-28-oic acid), is extracted from the chloroform bark of Betula utilis (Betulaceae). It demonstrates targeted cytotoxicity towards a number of melanoma-derived cell lines by causing cell death regardless of the p53 status of the cells. Betulinic acid is a very promising novel chemotherapeutic drug for the treatment of cancer because of its good therapeutic index and selective cytotoxicity against tumor cells, even at doses up to 500 mg/kg body weight. (28)

CUSCUTA REFLEXA :

The entire plant of Cuscuta reflexa (Convolvulaceae) was extracted in chloroform and ethanol, and its anticancer efficacy was assessed against Ehrlich ascites carcinoma (EAC) tumors in mice at dosages of 200 and 400 mg orally per kilogram of body weight, correspondingly. Hep3B cells were used to test the aqueous extract of C. reflexa for anticancer properties. The extract inhibited the overexpression of TNF-α and COX-2 that lipopolysaccharide (LPS) elicited in RAW264.7 cells; it also prevented NF-κB from binding to its motifs and caused apoptosis in Hep3B cells. Pro-apoptotic proteins BAX and p53 were up-regulated by the extract, while anti-apoptotic factors Bcl-2 and survival were down-regulated. (30,32)

CASSIA FISTULA :

Methanolic extract (ME) of Cassia fistula (Fabaceae) seed was investigated for its effects on tumor-bearing mice's life span and Ehrlich ascites carcinoma (EAC) growth. ME therapy revealed a rise in life duration, as well as a drop in the EAC tumor hosts' tumor volume and number of viable tumor cells. (35)

CASSIA TORA :

Using human cervical cancer cells (HeLa), the antiproliferative effect of cisplatin was assessed in methanolic leaf extract of Cassia tora (Fabaceae). In HeLa, the plant extract significantly inhibited proliferation, decreased DNA content, and triggered apoptosis in a concentration-dependent manner. It is phenolic chemicals that have the antiproliferative properties. action.(38)

CLEOME GYNANDRA :

Swiss albino mice were used to test the anticancer potential of the whole plant methanol extract of Cleome gynandra (Capparidaceae) (MECG) against the Ehrlich Ascites Carcinoma (EAC) cell line at the intraperitoneally at dosages of 200 and 400 mg/kg body weight. MECG demonstrates a significant reduction in tumor volume, viable cell count, tumor weight, and an increased life duration in EAC tumor-bearing mice ($p<0.01$). (40)

CENTELLA ASIATICA :

The transformation of the cell lines was considerably reduced by the crude extract (CE) of Centella asiatica (Apiaceae). 50% efficacious dosages were discovered for ehrlich ascites tumor cells (EAC) at 17 and 22 µg/ml and
Tumor cells (DLA) and Dalton's lymphoma ascites, respectively. CE administered orally prolonged the life span of these tumor-bearing animals and slowed the growth of solid and ascites tumors.In human melanoma SK-MEL-2 cells, Asiatic acid (AA), a pentacyclic triterpene present in Centella asiatica, reduced viability and caused apoptosis in a time- and dose-dependent manner. Moreover, the AA-induced apoptosis was inhibited by Trolox and Ac-DEVD-CHO, a particular caspase-3 inhibitor. The formation of ROS, modification of the Bax/Bcl-2 ratio, and activation of caspase-3 are potential mechanisms for AA-induced apoptosis, although they are not dependent on p53. Because the buildup of inactive phospho-Cdc2 and phospho-Cdc25C was greatly decreased by both SB203580 and p38 small interfering RNA (siRNA) inhibition, it was likely that Asiatic acid confined the breast cancer cells in the S-G2/M phase primarily through the p38 pathway. proteins and the S-G2/M phase cell counts. It has also been shown to be cytotoxic to human glioblastoma U-87 MG. Both necrosis and apoptosis are involved in this cell death process. Given that AA-induced cell death in colon cancer RKO cells was primarily apoptotic, the effect of AA may be cell type-specific.Reduced mitochondrial membrane potential, activated caspase-9 and -3, and elevated intracellular free Ca^{2+} are linked to AA-induced glioblastoma cell death. The water-based extract (AE) from With IC50 values of 698.0, 648.0, and 1000.0 µg/mL, respectively, centella asiatica leaves shown potential action against mouse melanoma (B16F1), human breast cancer (MDA MB-231), and rat glioma

(C6) cell lines. Investigations into the capacity of C. asiatica methanolic extract to cause apoptosis in several cancer cell lines revealed that MCF-7 cells were the most susceptible cell line for in vitro growth inhibitory activities. The components of phenolic, flavanoids, and triterpenes are what give these substances their antiproliferative properties. (44)

COLA NITIDA :

Cola nut methanol extract was tested for its possible anticarcinogenic properties against human breast cancer cell lines, MCF-7. MCF7 cells exposed to 80 µg/ml cola nut extract demonstrated an 8.29% rise. in the number of apoptotic cells and a corresponding decline in the proportion of cells in the S and G2/M phases of the cell cycle in contrast to control cells treated with DMSO. (46)

CIRSIUM JAPONICUM :

Cirsium japonicum (Asteraceae) (CJ) leaves and roots extracts in methanol and water shown possible antioxidant properties with a concentration-dependent reducing power ranging from 0.228 to 1.072. (0.1~0.5 mg/mL) and a high EC50 value of 40.25 µg/mL for the DPPH free radical scavenging activity. Using a variety of chromatographic approaches, the anticancer activity of C. japonicum in S180 and H22 mice was extracted and purified. Two flavone compounds, pectolinarin and 5,7-dihydroxy-6,4'-dimethoxyflavone, were identified and shown to significantly inhibit the proliferation of cancer cells. At 50 mg/kg, the rate of life extension in H22 mice was 99.13%, while the rate of inhibition in S180 animals was 55.77%. They prevent the implanted cancers S180 and H22 from growing. The extract's total flavonoid (quercetin) and phenolic (tannic acid) concentrations were 13.48 mg/g and 62.41 mg/g, respectively. According to the cytotoxic activity, the methanol extract inhibits the activity of stomach cancer cells by 35.40 percent. By using high-performance liquid chromatography (HPLC), the contents of the two aforementioned compounds in the methanol, ethanol, and aqueous extractions were found to be: pectolinarin 1.87%, 1.65%, 1.27%; 5,7-dihydroxy-6,4'-dimethoxyflavone: 0.515 %, 0.42%, 0.221 %. Additionally, the two flavones' anticancer action was investigated in S180 and H22 mice, and the results showed that they significantly reduced the growth of cancer cells and lengthened the mice's lives. (49)

CEPHALOTAXUS HARRINGTONIA :

A number of phytochemicals, including cephalotaxine and its anticancer esters (harringtonine and isoharringtonine), were extracted using chloroform from the leaves and stems of Cephalotaxus harringtonia (Cephalotaxaceae). as well as homoharringtonine) in the medium and callus. Its efficacy against experimental P388 leukemia and L-121O leukemia in mice is noteworthy. From C. harringtonia, a novel alkaloid with strong antileukemic action, deoxyharringtonine, harringtonine, cephalotaxine (5%), homoharringtonine (80%), and isoharringtonine, has been discovered. Protein synthesis inhibitor homoharringtonine (HHT) reduces the amount of KIT protein by preventing translation, which lowers the amount of phospho-KIT and stops its constitutive downstream signaling. Murine P815 cells, imatinib-resistant HMC-1.2 cells with both the V560G and D816V mutations, and imatinib-sensitive HMC-1.1 cells with the mutation V560G in the juxtamembrane domain of KIT were given HHT treatment, and their growth, apoptosis, and signal transduction were examined. (52)

CINNAMOMUM ZEYLANICUM :

The aqueous extract of cinnamon bark (ACE-c) was shown to have anti-neoplastic effect in cervical cancer cell line via increasing intracellular calcium signaling and decreasing mitochondrial membrane

potential, SiHa as a result of MMP-2 expression being downregulated. Furthermore, at 62.5 and 125 µg/ml, respectively, C. zeylanicum (Lauraceae) aqueous extract significantly (P<0.01) caused 20 and 37% thymic cells lymphoproliferation. The potential cytotoxic effects of C. zeylanicum bark extracts in petroleum ether and chloroform on KB and L1210 cell cultures were studied. The median effective doses of the petroleum ether extract were 60 and 24 µg/ml for KB and L1210 cells, respectively, and the median effective doses of the chloroform extract were 58 and 20 µg/ml. The ability of cinnamonaldehyde to induce apoptosis with alterations in nuclear structure was demonstrated by the cytotoxic effect of the aqueous cinnamon extract (ACE) from the bark of C. zeylanicum on malignant cells. form, DNA breakage, and cellular architecture; a fast decline in mitochondrial transmembrane potential; an increase in the generation of reactive oxygen species (ROS); the release of mitochondrial cytochrome c into the cytoplasm; and, finally, the induction of procaspase-9 and procaspase-3 processing. Trans-cinnamic aldehyde (cinnamaldeyde, CA) and an ethanolic extract (CE) made from the bark of C. cassia exhibit equipotent ability as inducers of Nrf2 transcriptional activity in non-immortalized primary fetal colon cells (FHC) and human colon cancer cells (HCT116, HT29). (55)

CONYZA CANADENSIS :

Conyza canadensis (Asteraceae) roots were extracted with methanol, and two novel dihydropyranones, conyzapyranone A and B, as well as the well-known 4Z,8Z-matricaria-γ-lactone, 4E,8Z-matricaria- γ-lactone, apigenin, taraxerol, simiarenol, spinasterol, stigmasterol, β-sitosterol, 9,12,13-trihydroxy-10(E)-octadecenoic acid, and Friedelanol. After being assessed for their antiproliferative properties, the isolated compounds were found to have significant cell growth-inhibitory action against the skin carcinoma (A431), breast adenocarcinoma (MCF-7) and human cervical adenocarcinoma (HeLa) cells. Duocarmycins (DUMs) A, B1, B2, C1, and C2, which are novel antitumors derived from the extract of Conyza Canadensis, were tested against human and murine tumor cells to determine their antitumor activities. Additionally, the growth of both their sensitive and adriamycin (ADM)-resistant lines of human nasopharynx carcinomama KB cells and breast carcinoma MCF-7 cells was inhibited. (57)

CLAUSENA LANSIUM :

Greater than cisplatin, a drug with powerful anticancer properties against human lung adenocarcinoma (A-549), human hepatocellular liver carcinoma (HepG-2), and human gastric carcinoma (SGC-7901) cancer cell lines. traditional anti-cancer medication. Two new amides, clausenalansamide A and clausenalansamide B, were identified and isolated from a C. lansium seed extract investigation. Three known amides were also assessed for their anti cancer efficacy against three human cancer cell lines, KB, MCF7, and NCIH187. The extract's antiproliferative properties are attributed to its flavonoid and phenolic composition. (60)

CROTON MACROBOTRYS :

The in vitro antiproliferative activity of n-hexane, dichloromethane, and methanol extracts of the entire plant of Croton macrobotrys (Euphorbiaceae) was assessed on the cell lines HT-29 (colon), 786-0 (kidney), and K562 (leukemia), PC-3 (prostate), OVCAR-3 (ovary), NCI-ADR/RES (drug-resistant ovary), NCI-H460 (lung), MCF-7 (mammary), U251 (glioma), and UACC-62 (melanoma). At a dosage of 25 µg/mL, the dicloromethane extract demonstrated action against all cell lines, with notable efficacy against NCI-H460 (GI50 0.33 µg/mL) and K5662 (GI50 0.91 µg/mL). Numerous phytoconstituents, including the triterpenoid β-amyrin, the steroid β-sitosterol, and the alkaloid corydine, are present in the extract. The two major alkaloids in the dichloromethane extract are corydine and salutaridine, whereas the minor constituents are β-sitosterol and stigmasterol. (62)

DRACOCEPHALUM TANGUTICUM :

It was discovered that a chloroform extract of the entire Dracocephalum tanguticum (CEDT) (Lamiaceae) plant had a high percentage of sapogenin or saponin (53.7%). CEDT at a dose of 90 µg/ml shown antitumor efficacy. action on T98G glioblastoma cells by inhibiting p21 and inducing cell death through the Caspases 3 and Bax pathways. When compared to adherent and spindle-shaped control cells, the cells treated with 30 µg/ml of CEDT for 72 hours and 90 µg/ml of CEDT for 48 hours displayed the hallmarks of apoptosis, including cell volume reduction, blebbing, detachment, and apoptotic bodies. Significant antiproliferation characteristics were shown by a saponin-rich extract in T98G glioblastoma cells. (67,69)

Conclusion:

The cancer is life thereatening disease cause by oncogene .in this disease condition uncontrolled growth of normal cell they disturbed the normal cell physiology of body the cancer have different types according to their effectiveness so mainly classified as malignant and benin cancer this type of cancer have different therapy according to their state of cancer like as radiotherapy, different types of medication but these nave severe side effect like as alopecia ,bone marrow depression, weakness etc this problem is overcome by herbal medicine they have less side effects as compare to these therapy and have less side effects so on this article majorly focus on different types of medicinal plants that have anticancer activity this information is helpful for knowledge and future drug development.

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