

NATURAL RESOURCES FROM PLANTS IN THE TREATMENT OF CANCER: AN UPDATE

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ABSTRACT

Cancer has become the second leading cause of death worldwide. The incidences of cancer are rising at an alarming rate but it can be reduced and controlled by evidence-based strategies for cancer prevention, early detection, and management of patients with cancer. Historically, it is proven that plants and their metabolites have great potential in the treatment of various acute diseases as well as chronic disorders. The novel bioactive compounds from many plants are being studied as potential therapeutic agents because of their high activity and low toxicity. This review gives a comprehensive description of such medicinal plants which have been studied as potentially effective against cancer.

Keywords: Ethnopharmacology, Cancer treatment, Drugs, Plants, Antitumor activity, Medicinal plants.

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INTRODUCTION

Cancer is an abnormal malignant growth of body tissue or cell which can occur on any part of the body. According to the World Health Organization (WHO), cancer is among leading cause of morbidity and mortality worldwide with approximately 14 million new cases and more than 8 million cancer-related deaths in 2012, and an expected rise of new cases by 70% within two decades [1]. A correct cancer diagnosis is essential for adequate and effective treatment because every cancer type requires a specific treatment regimen [2]. And thus, cancer treatment and prevention becomes a major focus area for scientists worldwide. The most common types of the treatment for cancers include surgery, chemotherapy, radiotherapy, and targeted therapy. Most cancer patients have to undergo some form of surgery whether to diagnose, treat or prevent cancer and it has been found to be of great help if cancer has not spread to other parts of body. The use of medicines or drugs as cancer treatment is chemotherapy. There are more than 100 chemotherapy drugs for cancer in use these days which vary in composition and mode of action. Radiotherapy is when high energy particles destroy cancer cells. It is the most common treatment for cancer. A more recent method is targeted therapy where substances attack specific cancer cells, minimizing damage to normal cells. The priority now is to have new therapeutic alternatives. One such approach is iron depletion strategy based on metal chelation in tumoral environment [3].

The use of herbs as medicines is believed to have its presence from the ancient times [4]. The first record on the medicinal use of plants was written in about 2600 BC from the Akkaidians and Sumerians [5]. Egyptian medicinal text, "Ebers Papyrus" from 1500 BC had consisted of over 700 drugs. Around 1100 BC, the Chinese *Materia Medica* came with the data of approximately 600 medicinal plants [6]. Medical methodologies of treatment as mentioned in Ayurveda are recorded in Susruta and Charaka dating from about 1000 BC [7]. The Greeks also contributed substantially to the rational development of herbal drugs. In 1950s, modern medicine began more systematically examining natural agents as a source of useful anticancer substances [8].

It has always been argued that "the use of natural products has been the single most successful strategy in the discovery of novel drugs" [9]. Traditional medical science is completely dedicated toward plants or animal based products in treatment or prevention of disease as well as the well-being of people. Commonly used plants in the treatment

of various diseases are *Zingiber officinale*, *Camellia sinensis*, *Curcuma longa*, *Aloe vera*, etc. [10]. Molecules derived from natural sources such as plants, marine organisms, and microorganisms have played and are still playing a dominant role in the discovery of leads for the development of drugs for most human diseases.

According to the WHO (2008), about three quarters of the world's population currently uses herbs or other forms of traditional medicines to treat illness. Even in the USA, the use of plants and phytomedicines has increased dramatically [11]. It has been also reported [12] that more than 50% of all modern drugs in clinical use are of natural origin; many of them have the ability to induce apoptosis in various cancer cells of human origin. Worldwide, scientists are continuously studying the vast variety of plants for their anticancerous activity against different types of malignancies but it is equally important that their findings are available for others to take lead. Therefore, an effort has been made here to compile all such studies in which plants having anticancer activities are documented.

The methodology for this review article has been an exhaustive literature survey of published work in research journals available in PubMed, Medline, Science Direct, and other such online libraries. The effort is to include all possible published work without going for time frame. The search was done with following keywords - drug therapy, alternative therapy for cancer, ethnopharmacology, plants in cancer treatment, natural sources for cancer treatment, complementary medicine, etc. All review, research articles and case reports were studied and included. A total of 1034 articles were identified, of which 496 were excluded at initial screening. Remaining papers were studied, and around 253 most relevant papers and studies are included, indexed, and described in this review Table 1 elaborates on all such studied plants along with their common name, family, anticancer activity and other medicinal properties.

DISCUSSION

Cancer, like any other fatal disease, is a cause of concern to the medical community worldwide. It causes serious implications on the patient, and there are generally severe side effects also of the treatment which the patient suffers consequently. The use of natural substances obtained from the plants is the need of the hour. They may have potential to prevent and cure cancer with least side effects.

There are a number of plants which have given promising results against a particular condition. For example, several workers have seen

Table 1: Studies on plants for their anticancer and other medicinal properties

Plant name	Family	Native place	Anticancer activity	Other medicinal properties
<i>Aegle marmelos</i> (L.) Corrêa (bael)	Rutaceae	India	Activity against lymphomas, breast cancer [13], ascites melanomas, and leukemia [14] induction of apoptosis [15]	
<i>Allium sativum</i> L. (garlic)	Amaryllidaceae	Central Asia	Used against breast cancer, prostate cancer [16], leukemia[17] intestinal cancer [18], stomach cancer [19]	
<i>Aloe barbadensis</i> (aloe)	Xanthorrhoeaceae	Yemen, Sudan and Somalia	Inhibits growth and spread of liver cancer, stomach cancer and various sarcomas [20], chemoprevention [21]	Wound healing activity [22]
<i>Alpinia galangal</i> (Thai galangal)	Zingiberaceae	South Asia and Indonesia	Activity against lung cancer, breast cancer, stomach cancer, prostate cancer [23], colon cancer, leukemia and multiple myeloma [24,25]	
<i>Amoora rohituka</i> (pithraj tree)	Meliaceae	Asia (U.P. East)	Inhibits growth of pancreatic, breast and cervical cancers [26]	
<i>Amorphophallus konjac</i> (elephant yam)	Araceae	Subtropical to Tropical Eastern Asia	Activity against lung cancer [27]	
<i>Andrographis paniculata</i> (Maha tita)	Acanthaceae	Southern and Southeastern Asia	Activity against cancers of breast, kidney, colon, prostate, ovary, stomach, nasopharynx malignant melanoma and leukemia [28-30]	Atherosclerosis, and diabetes [31,32]
<i>Annona triloba</i> (pawpaw)	Annonaceae	United States, South to Northern Florida and Eastern Texas	Active against certain breast and lung cancers [33]	
<i>Arachis hypogaea</i> (groundnut)	Fabaceae	South America	Have general anticancer activity [34]	Prevent cardiovascular conditions, aid in weight loss lower cholesterol, antioxidant activity [35]
<i>Aronia melanocarpa</i> (chokeberrie)	Rosaceae	Eastern North America	Activity studied against Colorectal cancer [36], colon cancer [37]	Cardiovascular disease [38]
<i>Artemisia annua</i> (sweet wormwood)	Asteraceae	Temperate Asia	Studied for Leukemia treatment [39]	
<i>Asparagus officinalis</i> (garden asparagus)	Asparagaceae	Europe, Northern Africa and Western Asia	Potential inhibitory activity of saponins on tumor growth and metastasis [40]	
<i>Asparagus racemosus</i> (shatavari)	Asparagaceae	Sri Lanka, India and the Himalayas	Activity against human breast cancer, human colon adenocarcinoma human kidney carcinoma, tumors[41] renal cell carcinoma [42]	Dyspepsia, hypertension, nervous disorders, tuberculosis, bronchitis, cough, gonorrhea, hyperacidity, leucorrhea, epilepsy, leprosy, fatigue, colic hemorrhoids, cardiac [43,44]
<i>Astragalus gummifera</i> (milkvetch)	Fabaceae	Temperate regions of the Northern Hemisphere	Prevents cancer before it begins [45]	
<i>Azadirachta indica</i> (neem)	Meliaceae	India	Activity against cancers of breast, lung, stomach, prostate and skin [46,47], Antitumor activity [48]	
<i>Bacopa monnieri</i> (brahmi)	Plantaginaceae	Southern India, Australia, Europe, Africa, Asia, and America	Anticancer activity [49], Ascites Carcinoma [50]	Anti-inflammatory [51], digestive, cardiotonic, anticonvulsant [52], depurative, sudorific, bronchodilator, diuretic [53]
<i>Berberis vulgaris</i> (European barberry)	Berberidaceae	Europe, Africa and Asia	Anticancer activity against prostate cancer, liver cancer and leukemia [54] antitumor [55-57]	Antidiarrheal, antiarrhythmic anti-inflammatory, fever reducing, analgesic (pain-reducing) effects [58,59]
<i>Bleekeria vitiensis</i> (markgraf)	Apocynaceae	Tropics and Subtropics	Treatment of breast cancer [8]	
<i>Brassica oleracea</i> (wild cabbage)	Brassicaceae	Coastal Southern and Western Europe	Reduces the risk of some cancers such as colorectal, breast [60], liver, lung, prostate, skin, stomach, and bladder cancers [61]	

(Contd.)

Table 1: (Continued...)

Plant name	Family	Native place	Anticancer activity	Other medicinal properties
<i>Bupleurum scorzonera folium</i> (Chai Hu)	Apiaceae	East Asia	Studied for Osteosarcoma [62]	
<i>Camellia sinensis</i> L. (tea tree)	Theaceae	East, South and South East Asia	Prevents colon, prostate and gastric cancers [63,64], blood vessel growth in tumors, skin cancer [22,65]	
<i>Camptotheca acuminata</i> (happy tree, cancer tree)	Nyssaceae	Southern China and Tibet	Used as drugs for cancer treatment [66]	
<i>Carmona retusa</i> (Fukien tea tree)	Boraginaceae	Eastern and South-Eastern Asia	Anticancer activity on HepG2 cell lines and significant activation of caspase-3 [67]	
<i>Catharanthus roseus</i> (Madagascar periwinkle)	Apocynaceae	India and Sri Lanka	Treatment of cancers such as leukemias, breast and lung cancers, lymphomas, Kaposi's sarcoma and advanced testicular cancer [8,68,69]	Antidiabetic, antiulcer, antibacterial, antioxidant, antidiarrheal, antihelminthic, hypotensive property [70,71]
<i>Codonopsis pilosula</i> (poor man's ginseng)	Campanulaceae	China and Korea	Immunological and hematopoietic effect for the patients undergoing chemotherapy or radiotherapy [72-74]	
<i>Coleus forskohlii</i> (coleus)	Lamiaceae	South America	Forskolin a diterpene produced by the roots, raises intracellular cAMP levels and thus may act as an effective anticancer agent [75]	
<i>Combretum caffrum</i> (bushwillow tree)	Combretaceae	South Africa	Active against lung, colon and leukemia cancers [76]	
<i>Crocus sativus</i> (saffron crocus)	Iridaceae	Italy and Iran	Having anticancer properties [77]	
<i>Curcuma longa</i> (turmeric)	Zingiberaceae	South Asia	Studied in colorectal cancer, gastrointestinal discomfort, colon cancer and polyps [78], chemotherapy [79]	
<i>Daphne genkwa</i> (Yuán Huā)	Thymelaeaceae	China	potential clinical utility in colorectal cancer therapeutics [80]	Anticoagulant, antiseptic, antiallergy, Rheumatoid arthritis [81], anti-inflammatory activities, antitussive, antiviral, diuretic, antioxidant activity [82], antiherpes [83]
<i>Datura innoxia</i> (Devil's trumpet)	Solanaceae	China	The withanolide, dinoxin B exhibited significant toxic effect against multiple human cancer cell lines, most sensitive being breast cancer cell lines [84]	
<i>Dysoxylum binectariferum</i> (rose mahogany)	Meliaceae	India	Studied as treatment of tumors, including leukemias, lymphomas, and solid tumors [8,85]	
<i>Echinacea</i> (purple coneflower)	Asteraceae	North America	In treatment of brain tumors and leukemias [86], cures side effects of cancer [87]	
<i>Emblica officinalis</i> (amla, Indian gooseberry)	Phyllanthaceae	India	Inhibits growth and spread of various cancers including that of the breast, uterus, pancreas, stomach, liver and ascites [88,89], antitumor [90]	Antioxidant, antitussive, immunomodulator, cytoprotective, analgesic, antimicrobial, antipyretic and gastroprotective [91]
<i>Ginkgo biloba</i> (maidenhair tree, Kew tree)	Ginkgoaceae	China	Activity against carcinoma and cancers of ovary, colon, prostate and liver [92,93]	
<i>Gloriosa superba</i> (glory lily)	Colchicaceae	Africa and Asia	Anticancer activity [94]	Antileprotic, oxytocic, stomachic, antimalarial, purgative, anthelmintic, cholagogue, alterative, febrifuge [95]

(Contd..)

Table 1: (Continued...)

Plant name	Family	Native place	Anticancer activity	Other medicinal properties
<i>Glycine max</i> (soybean)	Fabaceae	East Asia	Inhibition of cancer cell proliferation, causes cell differentiation and initiation of apoptosis [96], colon cancer [97]	
<i>Glycyrrhiza glabra</i> Linn. (mulethi)	Fabaceae	Southern Europe and Asia	Activity against cancers of breast, lung, stomach, colon [98], liver, kidney and leukemia [99,100]	Antioxidant, antiviral immunomodulatory, anti-inflammatory, cardioprotective [101]
<i>Gossypium hirsutum</i> (upland cotton)	Malvaceae	Mexico, West Indies, and America	Inducing apoptosis and arresting cancer cell division in G0/G1 phase [102], breast cancer [103]	
<i>Gynostemma pentaphyllum</i> (miracle grass, fairy herb)	Cucurbitaceae	China, Vietnam, Korea and Japan	Anticancer [104], anticancer activity on prostate cancer [105]	Antioxidant, or detoxifying agent, anti-inflammatory agent [106]
<i>Hibiscus sabdariffa</i> (rose mallow)	Malvaceae	West Africa	Inductive effect on human leukemia cells [107]	
<i>Hydrastis canadensis</i> (goldenseal)	Ranunculaceae	USA	Berberine, isoquinoline alkaloid extracted from <i>Hydrastis canadensis</i> displays a number of beneficial roles in the treatment of various types of cancers [108]	Antimicrobial [109]
<i>Kaempferia rotunda</i> (bhumi champa)	Zingiberaceae	China, India, Nepal	Secondary metabolites as cytotoxic [110]	Swellings and wounds [111]
<i>Lagerstroemia speciosa</i> (giant crape-myrtle)	Lythraceae	Southern Asia	Serves as anticancer [69]	Anti-diabetic [112]
<i>Larrea divaricata</i> (chaparral)	Zygophyllaceae	America	Acts as antimutagenic and anticarcinogenic agent [113]	
<i>Linum usitatissimum</i> (flax)	Linaceae	India	Works against breast cancer, lung cancer, prostate cancer and colon cancer [114-116]	Antidiabetic antiviral, bactericidal, anti-inflammatory and antiatherosclerotic [117-119]
<i>Lavandula angustifolia</i> (common lavender)	Lamiaceae	Western Mediterranean	Used to prevent multiplication of cancer cells [120]	
<i>Morinda citrifolia</i> (Indian mulberry)	Rubiaceae	Asia and Australasia	Activity against lung cancer and sarcomas [121]	
<i>Momordica charantia</i> (bitter melon)	Cucurbitaceae	Asia and Africa	Antitumor and antimutagenic effects [122]	Antimicrobial, antiviral, anti-HIV [123,124]
<i>Nigella sativa</i> (kalonji)	Ranunculaceae	South and Southwest Asia	Activity against various cancers such as cancers of the pancreas, colon, uterus, prostate, malignant ascites, malignant melanoma, malignant lymphoma, sarcomas, and leukemia [125-128]	
<i>Ocimum sanctum</i> (holy basil)	Lamiaceae	Indian Subcontinent	Inhibits growth and spread of various cancers such as breast cancer, liver cancer, and sarcomas [129-131]	
<i>Oldenlandia diffusa</i> (snake-needle grass)	Rubiaceae	China	Inhibits growth and spread of various cancers such as cancers of rectum, lung, ovary, stomach, uterus, colon, liver, brain, malignant melanoma, lymphosarcoma, malignant ascites, and leukemia [132,133]	
<i>Olea europaea</i> (olive tree)	Oleaceae	Africa and Southern Asia	Prevents breast cancer and colorectal cancer [34]	
<i>Oryza sativa</i> (Asian rice)	Poaceae	Asia	Activity against Bowel cancer [134]	Treatment of diabetes, hypertension, cardiovascular disease [135]
<i>Oxycoccus acrocarpus</i> (large cranberry)	Ericaceae	United States	Reduces the number of breast cancer tumors, delay tumor development, and slow metastasis of cancer to lungs and lymph nodes [136-138]	

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Table 1: (Continued...)

Plant name	Family	Native place	Anticancer activity	Other medicinal properties
<i>Panax ginseng</i> (ginseng)	Araliaceae	North America and Eastern Asia	Inhibits growth and spread of various cancers such as cancers of breast, lung, ovary, colon, prostate, renal cell carcinoma, malignant lymphoma, malignant melanoma, and leukemia [139,140]	
<i>Plantago ovata</i> (desert Indian wheat)	Plantaginaceae	Asia	Anticancer activity [141]	Treat hypercholesterolemia, hyperglycemia [142]
<i>Podophyllum peltatum</i> (mayapple)	Berberidaceae	USA	Have been used to treat oral hairy leukoplakia, combat skin cancers, ovarian cancer, lung cancer and prostate cancer, prostate cancer [143,144]	
<i>Polygonum tinctorium</i> (Chinese indigo)	Polygonaceae	Europe and Asia	Studied in prevention of leukemia [145]	
<i>Prunella vulgaris</i> L. (self-heal)	Lamiaceae	Europe, Asia and North America	Inhibit growth and spread of various cancers such as cancers of the breast, lung, cervix, oral cavity, esophagus, colon, thyroid, stomach, lymphoma, intracranial tumors and leukemia [146-148]	
<i>Raphanus sativus</i> (cultivated radish)	Brassicaceae	Southeast Asia	Antitumor activity and anti-cancer activity. 4-Methylsulfinyl-3-butenyl isothiocyanate (MTBITC) found in <i>Raphanus sativus</i> L., is a well-known anticancer agent [149]	
<i>Rhus succedanea</i> (Japanese wax tree)	Anacardiaceae	Asia	Anticancer activity [149]	Antimicrobial activities [150]
<i>Rubia cordifolia</i> (Indian madder)	Rubiaceae	Asia, Europe, and Africa	Growth and spread in cancers of breast, colon, ovary, lung, cervix, malignant ascites, malignant melanoma sarcoma, malignant lymphoma and leukemia [151,152]	
<i>Rumex acetosa</i> (sheep's sorrel)	Polygonaceae	Eurasia and British Isles	Studied in treatment for breast cancer, [153]	Diarrhea, scurvy, fever, and inflammation [154,155]
<i>Ruscus aculeatus</i> (butcher's broom)	Liliaceae	Iran to USA	Tumor-shrinking and anti-estrogenic abilities [156]	
<i>Sanguinaria canadensis</i> (bloodroot)	Papaveraceae	Eastern North America	Studied in cervical cancer and tumor treatments [157]	
<i>Saussurea lappa</i> (costus)	Asteraceae	Asia, Europe, and North America	Activity against cancers of the colon, ovary, gastric central nervous system, and lung [158,159]	
<i>Scutellaria barbata</i> (skullcap)	Lamiaceae	Asia	Works against many cancers such as stomach, lung, prostate and intestine [160,161]	
<i>Silybum marianum</i> (milk thistle)	Asteraceae	Mediterranean country	Inhibits growth of certain types of cancer, including skin cancer, breast cancer, ovarian cancer, and prostate cancer [162-164]	
<i>Solanum nigrum</i> (nightshade)	Solanaceae	Americas, Australasia and Africa	Inhibits growth and spread of stomach cancer, malignant ascites, cervical cancer, sarcomas, and leukemia [165,166]	
<i>Spinacia oleracea</i> (spinach)	Amaranthaceae	Ancient Persia	Prevents cancer [167]	
<i>Sutherlandia frutescens</i> (cancer bush)	Fabaceae	Southern Africa	Anticancer activity [168]	Antiviral, anti-inflammatory, and antifungal [169]
<i>Tabebuia species</i> (trumpet trees)	Bignoniaceae	Central and South America	Having anti-cancerous properties [170]	
<i>Tabebuia impetiginosa</i> (roble)	Bignoniaceae	America	Works against breast, leukemia and prostate lines [8]	
<i>Tanacetum parthenium</i> (feverfew)	Asteraceae	Europe, North America and Australia	Against cancer such as leukemia, breast cancer, secondary lung cancer, and secondary bone cancer [171-173]	
<i>Taxus brevifolia</i> (pacific yew)	Taxaceae	Northwest of North America	Useful in breast and lung cancer [174]	

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Table 1: (Continued...)

Plant name	Family	Native place	Anticancer activity	Other medicinal properties
<i>Terminalia bellerica</i> (kindal tree)	Combretaceae	Southwest India	Active fractions have shown inhibition in proliferation of breast (MCF-7), cervical (HeLa) and brain (U87) cancer cells [175]	Reported against diabetes, ulcer, microbial problems and hepatotoxicity
<i>Trifolium pratense</i> (red clover)	Leguminaceae	USA, Europe, Australia and Asia	Used in the cure of prostate and endometrial cancer [176]	
<i>Triticum aestivum</i> (common wheat)	Poaceae	Europe and USA	Prevention of breast cancer and colon cancer [177]	
<i>Uncaria tormentosa</i> (cat's claw)	Rubiaceae	South and Central America	Have anticancer activity [178]	Treatment of dengue, gastritis, arthritis [179]
<i>Vaccinium angustifolium</i> (lowbush blueberry)	Ericaceae	Easterncentral Canada	Anticancer activities [180]	
<i>Vaccinium myrtillus</i> (blue whortleberry)	Ericaceae	Europe, USA, Canada, Asia, Greenland		Lowered risk for several diseases, such as those of heart, cancer, eye and cardiovascular system [38,181]
<i>Viscum album</i> (European mistletoe)	Santalaceae	Europe and Asia	Bioactive ingredients modulated extrinsic and intrinsic pathways in cancer cells [182]	Phenolic acids, phenylpropanoids and flavonoids with antioxidant and anti-inflammatory activities, which decrease blood pressure
<i>Vitex negundo</i> (chastetree)	Lamiaceae	Africa and Asia	Antitumor and cytotoxic activity against cancer cell [183]	
<i>Yucca glauca</i> (soapweed)	Asparagaceae	North America	Exhibits antitumor activity against B16 melanoma [177]	
<i>Zingiber officinale</i> (ginger)	Zingibaraceae	North America	Inhibits growth and spread of various cancers including that of the ovary [184], cervix, rectum, liver, colon [185], urinary bladder, neuroblastoma, oral cavity, skin cancer, leukemia [186,187], and breast cancer [188]	
<i>Ziziphus mauritiana</i> (ber)	Rhamnaceae	Indo-Malaysian region of South-East Asia	Inhibits growth of cancer cells [189]	

effective results of *Aegle marmelos*, *Alpinia galangal*, *Catharanthus roseus*, *Dysoxylum binectariferum*, *Nigella sativa*, etc., against lymphomas. Similarly, studies have been done where leukemias have been significantly controlled by plants such as *A. galangal*, *Andrographis paniculata*, *Artemisia annua*, *Berberis vulgaris*, and *C. roseus*. Anticancer activity was also found in plants such as *Allium sativum*, *A. galangal*, *Amoora rohituka*, *A. paniculata*, and *Annona triloba* when studied against breast cancer. *A. sativum*, *A. galangal*, *A. paniculata*, *Azadirachta indica*, *B. vulgaris*, and *Brassica oleracea* have shown significantly promising results against prostate cancer whereas *A. paniculata*, *Asparagus racemosus*, *C. sinensis*, *Combretum caffrum*, *Ginkgo biloba* against colon cancer.

Some plants such as *Astragalus gummifera*, *Carmona retusa*, *Crocus sativus*, *Daphne genkwa*, *Datura metal*, and *Gloriosa superba* seem to be all-rounder as they inhibit any cancerous or malignant growth. It is a well-known fact treatment of cancer either through chemotherapy or radiotherapy also carries some side effects, but studies on *Codonopsis pilosula* and *C. longa* have shown that they help the patient to overcome those side effects. In a recent qualitative system review by Evans and coworkers [190], cancer patients' experiences of using *Viscum album* (mistletoe) are reported, in which they have experienced demonstrable changes in their physical, emotional and psychological well-being as well as reduction in chemotherapy side effects after mistletoe treatment.

The shift toward natural healing is opening several doors to more patient-friendly treatment of cancer, and thus better options are

generated to cure such a fatal disease. More research is required to isolate and purify active agents from these plants and thus bring out optimum potential of them.

CONCLUSION

There are many traditional systems of medicine around the globe, each with distinct style of treatment and cultural origins. Before the advent of modern medical treatments, people worldwide have utilized the natural resources to stay healthy and have claimed curing of various chronic and critical disorders [191-194]. This paper concentrated on highlighting the potential of vast plant resources as anticancer agents. Today, plant-derived active agents as well as chemically synthesized drugs are being studied, explored and undergoing clinical trial. Hence, the scientific study on the derivation of drugs through bioprospection and systematic conservation of the concerned medicinal plants are thus of great importance.

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