

## Social and Economic Burden of Cancer on 2020-Mini Review

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### Abstract:

In natural products have been served as a rich source of a lead compound for drug development against an extensive array of biological targets including an assortment of forms of cancer. Induction of apoptosis as an involuntary cell passing away mechanism for wiping out unwanted cells in tissues is one of the effective strategies to the kill of cancer cells. Usage of conventional medicinal plants are becoming popular in the treatment of various diseases and using as a preventive medicine, which generally categorized as alternative or complementary medicine in the current scenario. The herbal medicine contains being used by indigenous people from generations to treat many different health conditions such as hay fever, irritable bowel syndrome, menstrual problem and skin diseases. Currently there is huge public interested in using herbal medicinal plant species to cure major diseases like cancer. Plants have played a noteworthy role in the human competition with remedies. The World Health Organization (WHO) has announced that the number of new cancer cases will get to 15 million by the year 2020. Cancer is responsible for 12% of the world's mortality and the second-leading cause of death in the Western world. Communicable diseases has limited chances of cure, chemotherapy is the major contributing factor to this topical situation. This review report motivates the young scientists in pharmacy and life Science field.

**Keywords** Apoptosis; Cancer; Chemotherapy; Remedies; Medicinal plant

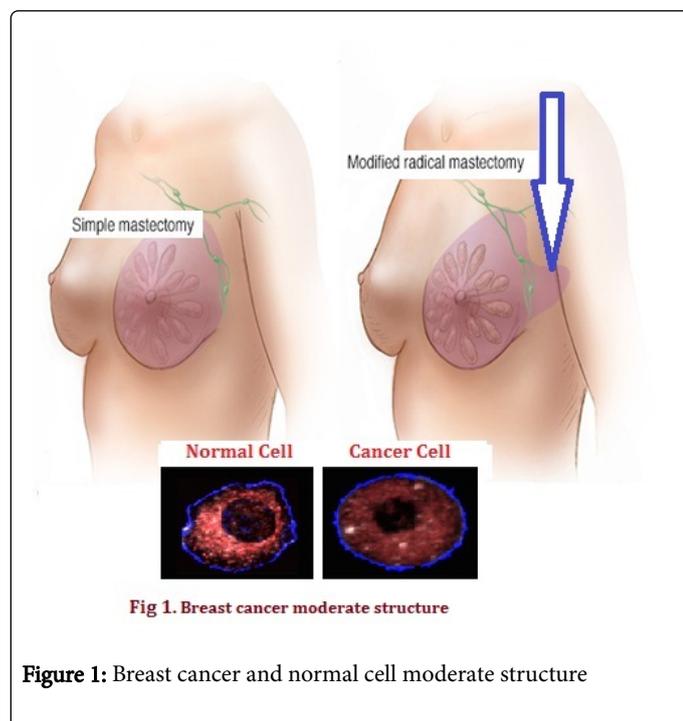
### Introduction

Mortality rate of cancer is becoming unacceptably high and is, therefore, a worldwide anxiety. As per the statistics total integer of cancer death in 2007 were 7.6 million, of which 62% were in budding countries and 38% in residential countries [1]. Historically natural products have served as a rich resource of the show the way compounds for drug enlargement against a wide array of biological targets including a variety of forms of cancer. Rummage approximately continuous in rigorous footing to notice unexplored plants and animals as potential innovative sources of anticancer drugs [2]. Excessive free radicals may produce oxidative derivatives which can damage lipids, proteins and DNA resulting into various chronic and degenerative diseases and disorders such as cancer cardiovascular, Alzheimer and aging etc., [3]. Antioxidant derivative on or after plants particles are supposed to be protected given that they are natural in starting point and have the capability to frustrate the harmful consequence of thoughtless oxygen species ROS [4]. Oxidative stress induces a cellular redox imbalance which has been observed in a variety of cancer cell lines. The Polyphenols include existing exposed to inhibit the cancer-associated enzyme telomerase, cell cycle and induced apoptosis [5]. Chemotherapy which is a chemical based therapy remains the main mortality for treatment against highly developed stages of the cancers, two main issues encountered in cancer chemotherapy are the development drug resistance and presence of toxic elevation effects which reduce drug efficacy [6].

Cancer is multifaceted disease characterized by abnormal cellular proliferation, expansion and progression is depends on the cellular accumulation of a variety of genetic and epigenetic changes in human [7-8]. Cancer development is normally caused by oncogene-tumor

suppressor gene and micro RNA gene alteration [9]. The progress of cancer is mostly triggered by external factors, especially environmental factors (90%). These include smoking (30%), diet and obesity (35%), infection (20%), radiation (10%), stress and environmental pollution (5%), while the genetic factors contribute only (10%) cause cancer [10]. Induction of apoptosis an involuntary cell death mechanism for wiping out unwanted cells in tissues is one of the effective strategies to kill cancer cells [11]. Plants have played a noteworthy role in providing the human race with remedies. At present phototherapy is a documented complementary and substitute medicinal (CAM) therapeutic method. These are one of the promising discoveries in health care as supportive medicine in the treatment of diseases like cancer [12]. Medicinal plants are well thought-out as potential sources for drug that encompass to conduct experimental trials scientists are investigating properties of medicinal plants in order to develop novel drugs against disease like cancer. Medicinal herbs have profound scope and have been used to find potential anti-cancer compounds. Numerous cancer researchers for the chemotherapeutic impending of the medicinal plant have been approved out in an effect to discover new therapeutic agent associated with current therapeutic agents [13]. Phytochemicals can be derivative from any part of plant like barks, leaves, flowers, roots, fruits, seeds, etc. Numerous effectual anticancer and antioxidant agents in progress user in experimental trials for anticancer activity are the inaccessible beginning ordinary source or are associated to them [14,15]. Cancer is most important causes of death worldwide, breast and prostate cancer are two of the majority widespread malignancies, and causing social and financial burden to the patients. As per the stats about 10 million new cases are diagnosed and over 6 million deaths happen worldwide per annum, not including non-melanoma skin cancer [16]. Breast cancer is a major worldwide health issue and is considered as the most common malignancy and widespread type of cancer in the western countries [17]. In the Structure of Figure 1 normal and cancer cells are clearly exposed anticancer agents induced cell succession arrest and or

cell death by apoptotic or non-apoptotic mechanisms together with necrosis, autophagy and mitotic catastrophe [18,19].



**Figure 1:** Breast cancer and normal cell moderate structure

Natural products determination thus carries on to engage in recreation a most important role as active substance; model molecules for the unearthing and corroboration of drug target [20,21]. Antioxidant enzymes make up the first line of protection alongside oxidative constant worry and smash up caused by free radicals. When there is a disproportion sandwiched between oxidative stress and antioxidant enzymes then there is a possibility that disease such as malignancy, an autoimmune disorder, aging, the cardiovascular and neurodegenerative sickness may build up [22,23]. Approximately 80% of the patients still rely on conventional medicine for the treatment of widespread poor health [24]. It is observed that management of cancer and infection diseases always obligatory a rummage around for new-fangled drugs. Most of the drugs are at this time in use for cancer in chemotherapy, they exhibit cell toxicity which induces the genotoxic, carcinogenic and teratogenic effect on tumor cell [25]. In Indian scheme of pills, the plant has been recognized as thermo genic, purgative, expectorant and diuretic and used in the treatment of leprosy, erysipelas ulcer, cough, bronchitis, constipation, flatulence, dyspepsia, menstrual troubles, tuberculosis and anemia [26]. Natural products have been investigated to show potential new leads in the pharmaceutical expansion. Cancer is major public health predicament worldwide with millions of new cancer patients diagnosed each year and many people are dying with this ailment. Chemotherapy is used as the principal mode of handling for a variety of cancers. This is the reason researchers have paid attention to the anticancer activity of the plants for make it as an alternative and effective treatment of cancer [27,28].

Nowadays conventional medicinal plants are fetching popular for use in disease behavior, preventive medicine, and health encouragement and normally categorize as alternative or harmonizing medicine. Herbal medicine has been used by aboriginal working class for generations to treat numerous poles health environment such as

hay fever, irritable bowel syndrome, menstrual predicament and skin diseases. Currently there is huge interest in public in the usage of herbal medicinal plant species to cure major disease like cancer [29], which is one of the most important causes of human deaths. The World Health Organization (WHO) has announced that the number of new cancer cases will reach 15 million by the year 2020 [30]. Cancer refers to malignant tumors that can make obvious both local invasion of tissues and distant spreading through the body via the development of metastasis. The growth of cancer cells depends not only on the rate of cell division but also on the rate of cellular slow destruction [31]. Apoptosis is documented as a mechanistically driven form of the cell death in response to specific stimuli or by activation following various forms of cell injury or constant worry [32]. Many conventional plants in the world have been used as a secondary therapy for cancer treatment and a number of these have recently been report to be especially shows potential probable candidates [33-37]. Some ordinary harvest encompass been urbanized for use in cancer therapy and control of inflammation in animal together with flowing anthracyclines (doxorubicin, daunorubicin, epirubicin, idarubicin) Vinca alkaloids (vinblastine, vincristine, vindesine, vinorelbine) taxanes (paclitaxel, docetaxel) and podophyllotoxin and its derivative (topotecan, irinotecan) [38,39]. Phytotherapy is a multi-targeted move towards where multiple secondary metabolites exert an antagonistic or a synergistic consequence for a concluding therapeutic rejoinder [40]. Therefore, a complex take out with manifold molecules occupied in harmonizing behavior could be turned into a successful rehabilitation for cancer. Nevertheless, using multifaceted phytotherapeutics have need of chemical categorization for quality control, protection and effectiveness [41]. For instance the frequency of breast cancer in India is on the rise and is rapidly becoming the major type cancer in females, where cervical cancer to stand on second major type cancer. The number of women dying every year with breast cancer has also been progressively increasing. Unsurprisingly 48,170 women who died of breast cancer in 2007, the number breached the 50,000 mark in 2010. Uttar Pradesh record the uppermost quantity of breast cancer deaths among states in 2010, with 8,882 followed by Maharashtra (5,064), Bihar (4,518) West Bengal (4,095) Andhra Pradesh (3,863) Madhya Pradesh (3,179) and Rajasthan (3,097) [42]. Antioxidants are compounds that can impediment or hold back the oxidation of lipids or other molecules by inhibit the commencement or broadcasting of oxidative chain reaction [43]. Phenolic acids hold over and over an additional time been in a meeting as ordinary antioxidants in various plant parts like fruits, vegetables, and other plants. Rosmarinic acid, an imperative phytochemical, has been established to be a potent active substance in opposition to human immunodeficiency virus type 1 (HIV-1) [44]. Cancer is a leading cause of death due to lack of early recognition methods and poor prognosis when detected late especially in the developing countries. Breast cancer is a most important cause of mortality among women worldwide [45]. Oxidative stress, resulting from an imbalance between configuration and neutralization of exceedingly reactive free radicals is worried in carcinogenesis [46]. Plants are known to surround a diverse assortment of secondary metabolites including anti-cancer compounds and more than a few antioxidants. Natural antioxidants such as flavonoids and polyphenols are highlighted for their anti-oxidative property of hydrogen donating, radical scavenge and metal chelating behavior for anticipation and treatment of cancer. Therefore much concentration has been heading towards the development of work of anticancer drugs on or after plant source [47-51]. Cancer is accountable for 12% of the world mortality and one of the second-leading causes of death in the Western world. Incomplete chances for cure by chemotherapy are a most important

contributing factor to this state of affairs. Despite much advancement in recent years, a key predicament in tumor therapy with recognized cytostatic compounds is the enlargement of drug resistance and frightening side effects. Most documented drugs knowledge from inadequate specificity in the direction of tumor cells. Hence, the acknowledgment of enhanced anti-tumor drugs is straight away needed [52]. Obviously, 69% of anticancer drugs standard sandwiched between the 1980s and 2002 are either natural harvest or urbanized based on knowledge gained from natural harvest [53]. Cancer is one of leading cause of morbidity and mortality worldwide, despite huge efforts of science researchers from various discipline aimed at ameliorating the dismal conclusion of cancer mortality. The rate of death from cancer has not declined considerably even with advances in surgery, radiotherapy, and chemotherapy. Prevention of cancer remains evidently a necessary part of the contest adjacent to cancer in the world [54,55]. Cancer cells occur as a result of unique manifold genetic disorder that may arise from experience to environmental and professional carcinogenic agents or dietary habits and communicable agents [56]. Nonnutritive biologically full of life chemical compounds in plants which do something as a natural defense system for host plants and provide color, aroma and flavor [57]. According to the topical research of American cancer society, breast cancer is the majority cancer among American women after skin cancer and it is the most important cause of cancer death in women, exceeded only by lung malignancy. Concerning 1 in 8 (12%) women in the US will develop invasive breast cancer during their natural life [58-59]. Breast cancer is the most common type of cancer to affect women worldwide, accounting for 23% of all cancer diagnosis and 14% of cancer-related deaths [60]. An assortment of genetic and environmental factors, together with family history and Westernized diet, are regarded as the major risk factors for breast cancer, but the exact cause has not yet been predictable [61]. Breast cancer can be categorized according to the appearance of hormone receptors, in concert with estrogen receptor (ER), progesterone receptor (PR), and human epidermal enlargement factor receptor 2 (HER2). ER-negative breast cancers, which account for almost 25%-30% of all breast cancers, have a poorer projection than that of ER-positive cancers [62,63]. The plants can manufacture many metabolic compounds for the most part during the secondary metabolites plant extracts contain several compounds that have biological dynamic properties which has natural medicine [64]. Bioactive compounds are in general accumulated as secondary metabolites in all plant cells but their attentiveness varies according to the plant parts [65]. The World Health Organization (WHO) estimates that almost 75% of World's population has therapeutic familiarity with herbal drugs. Cancer is one of the most dangerous diseases in humans and presently there is a considerable scientific research to discover new anticancer agents from natural sources [66]. Long before the means in beginning of the Christian era, plants were used as new medicines in developed countries and highest population presented countries like China, India, Egypt and Greece. Drugs such as acacia, castor oil and fennel are mention along with noticeable reference to such compounds as iron oxide, sodium chloride, sodium carbonate and sulphur. Charaka made fifty groups of ten herbs each of them adequate for an ordinary physician's need. Sushruta arranged 760 herbs in 7 dissimilar sets based on some of their widespread properties [67]. Cancer is An infection which occurs when change in a group of standard cells within the body lead to unrestrained growth, causing a lump called a tumor; this is true of all cancers except leukemia (cancer of the blood). If left unprocessed, tumors can grow and multiply into the neighboring normal tissue or to other parts of the body via the bloodstream and

lymphatic systems and can have an effect on the digestive, nervous and circulatory system [68].

## Conclusion

In the current scenario, an assortment of infectious and non-communicable diseases spread in World. It may be generated researchers good novel drug design and drug development against Cancer treatment. This review to initiate maintenance drug amalgamation may use this review approaches in future studies and formulate an idea in pharmacy and life science researchers.

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