Review Article

SOCIAL AND ECONOMIC BURDEN OF CANCER ON 2020-REVIEW

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ABSTRACT
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 machinery for wiping out superfluous cells in tissues is a part of the effectual strategies to the kill of tumor and cancer cells. The current scenario conventional medicinal plant is growing up to be a popular use of various disease treatments, preventive medicine, and health promotion generally categorized as alternative or complementary medicine in the contemporary scenario. Herbal medicine contains be exploited by indigenous people for generations to treat many different health conditions such as hay fever, bad-tempered bowel syndrome menstrual problem and skin conditions currently there is great public interest in finding herbal medicinal plant species to cure major diseases like cancer. Plants have been a noteworthy role in as long as the human competition with remedies. The World Health Organization (WHO) has participated that the numeral of new cancer cases will go to 15 million by the year 2020. Cancer is dependable for 12% of the world's mortality and the second-leading effect of death in the Western world. Communicable and Communicable diseases limited chances for a cure by chemotherapy are a most important contributing factor to this typical situation. This review report motivates to young pharmacy and life Science field.
Keywords: Apoptosis, cancer, chemotherapy, remedies, medicinal plant

INTRODUCTION

Mortality due to cancer is becoming unacceptably high and is, therefore, a worldwide anxiety. Statics indicate that a total integer of cancer deaths in 2007 were 7.6 million, of which 62% were in budding countries and 38% in residential countries [1]. Historically natural products have serve as a rich resource of show the way compounds for drug enlargement against a wide array of biological targets including various forms of cancer. Rummage around continuous in rigorous footing to notice unexplored plants and animals as potential innovative sources of anticancer drugs [2]. Excessive free radicals may produce oxidative constant worry that can damage lipids, proteins and DNA resulting into various chronic and degenerative diseases and or disorders such as cancer, cardiovascular, Alzheimer and aging etc.,[3].Antioxidant derivative from plants particles are presumed to be safe since they are natural in starting point and have the competence to counteract the damaging effect of reactive oxygen species ROS[4].Oxidative stress induces a cellular redox imbalance which has been observed in a variety of cancer cell lines. The Polyphenols have been shown 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 side effects which reduce drug efficacy [6].

Cancer is a complex multifactorial cell disease characterized by abnormal cellular proliferation cancer development and progression is dependent on the cellular accumulation of various genetic and epigenetic events [7-8]. Cancer development is normally caused by oncogene-tumor suppressor gene and micro RNA gene alteration [9]. Accumulating evidence suggests that development of cancer is mostly triggered by external factors on environmental factors (90%). These include smoking (30%), diet and obesity (35%), infection (20%), radiation (10%) and stress and environmental pollution (5%) while the genetic factors contribute only (10%) to the causes of cancer [10]. Induction of apoptosis a programmed cell death mechanism for wiping out unwanted cells in tissues is one of the effective strategies to kill cancer cells [11]. Plants have been noteworthy accountability in on condition that the human race with remedies. At present phototherapy is a documented complementary and substitute medicine (CAM) therapeutic modality [69]. It is one of the promising finds in health care as supportive medicine in the treatment of diseases like cancer[12].Medicinal plants are considered as potential sources for drug and many novel products have reached clinical trials scientist are investigating properties of medicinal plants in order to develop novel drugs against disease like cancer from natural products. Medicinal herbs profound scope and have been used to find potential anti-cancer compounds items. Numerous cancer researchers for the chemotherapeutic potential of the medicinalplanthas been carried out in an effect to discover new therapeutic agent associated with current therapeutic agents [13]. Active phytochemicals can be derived from any part of plant-like park leaves, flowers, roots, fruits, seeds, and so forth. Many effective anticancer and antioxidant agents in current users in clinical trials for anticancer activity were isolated from natural sources or are related to them [14-15].Cancer is leading causes of death worldwide Breast and prostate cancer are two of the most common malignancies and contribute significantly to the social and economic burden of cancer about 10 million new cases are diagnosed and over 6 million deaths occur worldwide annually excluding non-melanoma skin cancer [16].

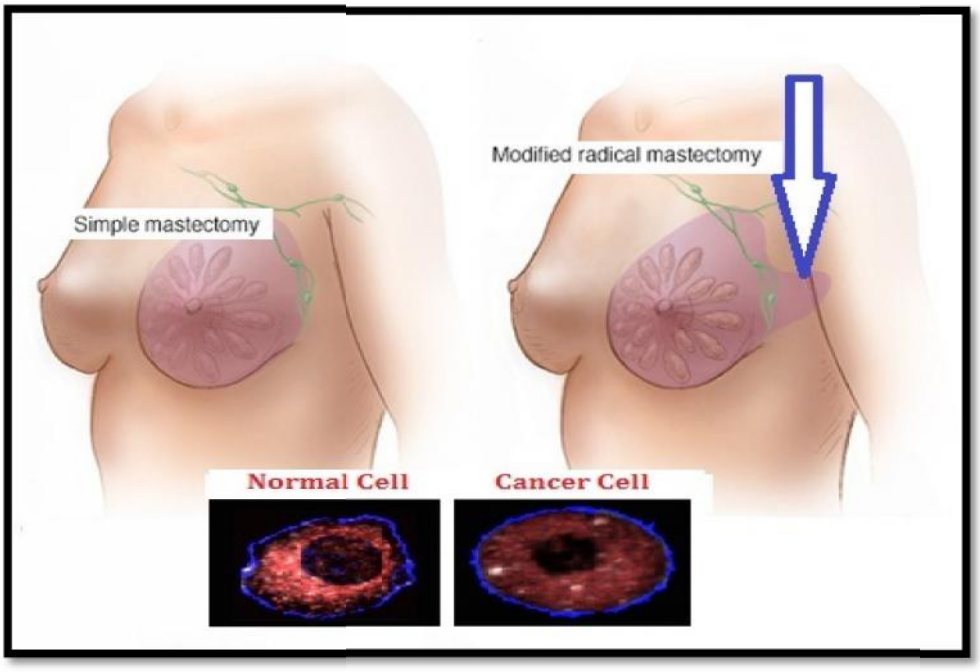

Fig-1 Breast cancer and Normal cell moderate structure

Breast cancer a major worldwide health issue is considered as the most common malignancy and most common cause of cancer-related death in the western country [17]. In the Structure of Fig.1 normal and cancer cells are clearly exposed anticancer agents induced cell cycle arrest and or cell death by apoptotic or on apoptotic mechanisms including necrosis senescence, autophagy and mitotic catastrophe [18-19].Natural products will thus continue to play a major role as active substances, mo0del molecules for the discovery and validation of drug targets [20:21].Antioxidant enzymes constitute the first line of defense against oxidative stress and damage caused by free radicals. When

there is an imbalance between oxidative stress and antioxidant enzymes then there is a chance that diseases such as cancer, autoimmune disorders, aging, the cardiovascular and neurodegenerative disease may develop [22-23]. Approximately 80% of the world's population still relies on traditional medicines for the treatment of common illness [24]. It is observed that management of cancer and infection diseases always required a search for new drugs. Although numerous drugs are currently in use for cancer chemotherapy they exhibit cell toxicity induces the genotoxic, carcinogenic and teratogenic effect in no tumor cell [25]. In Indian system of medicine, the plant has been documented as thermogenic, purgative, expectorant, diuretic and used in the treatment of leprosy, erysipelas ulcer, cough, bronchitis, constipation, flatulence, dyspepsia, menstrual problems tuberculosis and anemia[26].Natural products have historically and continually been investigated for promising new leads in pharmaceutical development. Cancer is major public health problem worldwide with millions of new cancer patients diagnosed each year and many deaths resulting from this disease. Chemotherapy remains the principal mode of treatment for various cancers. Researchers have focused on the anticancer activity of the plants because of the treatment and prevention of cancer [27-28].

Nowadays traditional medicinal plants are becoming more popular for use in disease treatment, preventive medicine, and health promotion and generally categorized as alternative or complementary medicine. Herbal medicine has been used by indigenous peoples for generations to treat many different health conditions such as hay fever, irritable bowel syndrome menstrual problem and skin conditions currently there is great public interest in finding herbal medicinal plant species to cure major diseases like cancer [29], which is one leading causes of human deaths. The World Health Organization (WHO) has participated that the number of new cancer cases will reach 15 million by the year 2020 [30].Cancer refers to malignant tumors that can demonstrate both local invasions of tissues and distant spreading through the body via the process of metastasis. The growth of cancer cells depends not only on the rate of cell division but also on the rate of cellular attrition [31].Apoptosis is recognized as a mechanistically driven form of the cell death in response to specific stimuli or by activation following various forms of cell injury or stress [32].many traditional plant around the world have been used for cancer treatment and a number of these have recently been reported to be especially promising potential candidates [33-37]. Some natural products have been developed for use in cancer therapy and control of inflammation in animal including flowing anthracyclines (doxorubicin, daunorubicin, epirubicin, idarubicin) Vinca alkaloids(vinblastine, vincristine, vindesine, vinorelbine) taxanes (paclitaxel, docetaxel) and podophyllotoxin and it is derivatives (topotecan, irinotecan) [38-39]. Phytotherapy is a multi-targeted approach where multiple secondary metabolites exert an antagonistic or a synergistic effect for a final therapeutic response [40]. Therefore, a complex extract with multiple molecules engaged in complementary activities could become an effective therapy for cancer. Nevertheless, using complex phytotherapeutics require chemical characterization for quality control, safety and efficacy [41]. For instance the incidence of breast cancer in India is on the rise and is rapidly becoming the number one cancer in females pushing the cervical cancer to the second spot. The number of women estimated to be dying of breast cancer every year has also been steadily rising. As against an estimated 48,170 women who died of breast cancer in 2007, the number breached the 50,000 mark in 2010. Uttar Pradesh recorded the highest number of breast cancer deaths among states in 2010, 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 delay or inhibit the oxidation of lipids or other molecules by inhibiting the initiation or propagation of oxidative chain reactions [43] Phenolic acids have repeatedly been implicated as natural antioxidants in fruits, vegetables, and other plants. Rosmarinic acid, an important phytochemical, has been found to be a potent active substance against human immunodeficiency virus type 1 (HIV-1) [44]. Cancer is a leading cause of death due to lack of early detection methods and poor prognosis when detected late especially in developing countries. Breast cancer is a leading cause of mortality among women worldwide [45]. Oxidative stress, resulting from an imbalance between formation and neutralization of highly reactive free radicals is implicated in carcinogenesis [46]. Plants are known to contain a diverse range of secondary metabolites including anti-cancer compounds and several antioxidants. Natural antioxidants such as flavonoids and polyphenols are explored for their anti-oxidative properties of hydrogen donating, radical scavenging

and metal chelating activities for prevention and treatment of cancer. Therefore much attention has been directed towards the development of novel anticancer drugs from plant sources [47-51]. Cancer is responsible for 12% of the world's mortality and the second-leading cause of death in the Western world. Limited chances for cure by chemotherapy are a major contributing factor to this situation. Despite much progress in recent years, a key problem in tumor therapy with established cytostatic compounds is the development of drug resistance and threatening side effects. Most established drugs suffer from insufficient specificity toward tumor cells. Hence, the identification of improved anti-tumor drugs is urgently needed [52]. Evidently, 69% of anticancer drugs approved between the 1980s and 2002 are either natural products or developed based on knowledge gained from natural products [53]. Cancer is one of leading cause of morbidity and mortality worldwide, despite enormous efforts of science researchers from various disciplines aimed at ameliorating the dismal outcome of cancer mortality. The rate of death from cancer has not declined significantly even with advances in surgery, radiotherapy, and chemotherapy. Prevention of cancer remains evidently an essential part of the contest against cancer in the world [54-55]. Cancer cells occur as a result of unique multiple genetic disorders that may arise from exposure to environmental and occupational carcinogenic agents or dietary habits and infectious agents [56]. Nonnutritive biologically active chemical compounds in plants which act as a natural defence system for host plants and provide colour, aroma and flavour [58] According to the recent researches of American cancer society, breast cancer is the most common cancer among American women after skin cancer and it is the second leading cause of cancer death in women, exceeded only by lung cancer. About 1 in 8 (12%) women in the US will develop invasive breast cancer during their lifetime [59]. Breast cancer is the most common type of cancer to affect women worldwide, accounting for 23% of all cancer diagnoses and 14% of cancer-related deaths [60]. Various genetic and environmental factors, including family history and Westernized diet, are regarded as the major risk factors for breast cancer, but the exact cause has not yet been identified [61]. Breast cancer can be categorized according to the expression of hormone receptors, including estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2). ER-negative breast cancers, which account for almost 25%–30% of all breast cancers, have a poorer prognosis than that of ER-positive cancers [62-63]. The plants can produce many metabolic compounds mainly during the secondary metabolites, plant extracts contain several compounds that have biological active which used as natural medicine [64]. Bioactive compounds are normally accumulated as secondary metabolites in all plant cells but their concentration varies according to the plant parts [65]. The World Health Organization (WHO) estimates that almost 75% of World's population has therapeutic experience with herbal drugs. Cancer is one of the most dangerous diseases in humans and presently there is a considerable scientific discovery of new anticancer agents from natural products [66]. The plants were used medicinally in China, India, Egypt and Greece long before the beginning of the Christian era. Drugs such as acacia, castor oil and fennel are mentioned along with apparent references to such compounds as iron oxide, sodium chloride, sodium carbonate and sulphur. Charaka made fifty groups of ten herbs each of them sufficient for an ordinary physician's need. Sushruta arranged 760 herbs in 7 distinct sets based on some of their common properties [67]. Cancer is a disease which occurs when changes in a group of normal cells within the body lead to uncontrolled growth, causing a lump called a tumor; this is true of all cancers except leukemia (cancer of the blood). If left untreated, tumors can grow and spread into the surrounding normal tissue, or to other parts of the body via the bloodstream and lymphatic systems and can affect the digestive, nervous and circulatory system [68].

CONCLUSION

In current scenario various communicable and noncommunicable diseases spread in World. It may be generated researchers good novel drug design and drug development against Cancer treatment. This review to be initiated conservation drug synthesis may use this review approaches in future studies and formulate an idea in pharmacy and life science researchers.

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