

---

## **LIMITATIONS OF HERBAL DRUG THERAPY IN CANCER TREATMENT**

---

Subhendu S. Mishra\*, Sandesh Asati

\*Correspondence Info

Subhendu Sekhar Mishra,

Department of Pharmaceutics,

Radharaman College of Pharmacy, Ratibad, Bhopal, M.P, India

*Email:* [sekhar.subhendu@gmail.com](mailto:sekhar.subhendu@gmail.com)

Received 15 May 2014; Revised 23 May 2014; Accepted 28 May 2014

### **ABSTRACT:**

---

Cancer is one of the areas, in which the use of natural medicinal drug could be very common. The research of cancer is a very expensive area. As there are studies that state both pros and cons, the role of diet in carcinogenesis and cancer prevention remains unconvincing and nevertheless below investigation. In this review, herbal medicine and its association with cancer prevention are discussed under the survey of the literature. In many components of the arena, in healing practices, there are various types of traditional herbal medicines that have been used to treat illnesses. Different studies have been managing to find the best result for prevention. As conventional drugs have been accepted as harmful and not very efficient and herbals are considered safe, expectations from herbal drugs are growing.

**KEY WORDS:** Cancer, herbal anticancer drugs, prevention of cancer

---

### **INTRODUCTION:**

Cancer is a dreadful disease and any practical solution in combating this disease is of paramount importance to public health (Rao et.al. 2008). Cancer is the abnormal growth of cells in our body that can lead to death. Cancer cell usually invade and destroy normal cell. More and more cancer research work have been done and yet we don't understand exactly what cancer is?

The major cause of cancer is smoking, dietary imbalances, hormone and chronic infections leading to chronic inflammation. Every years millions of peoples are diagnosed with cancer leading to death, according American cancer society (Prema et.al. 2011).

Many of the drugs in cancer care originated from natural products. As a healthy diet,

rich in vegetables and fruits, is one of the protective factors for cancer; plants and derivatives are the focus of many studies. Green tea, lycopene and selenium are some of them. In this review, the association between cancer prevention and herbal medicine.

Anticancer drugs discovered from herbal medicines have a long history and plant-derived compounds have been an important source of several useful anti-cancer agents in clinical practice, such as vinblastine, vincristine, thecamptothecin derivatives, topotecan and irinotecan, topotecan, which are isolated or derived from *Catharanthus roseus* G. Don. (Apocynaceae), *Camptotheca acuminata* Decne (Nyssaceae), *Podophyllum peltatum* Linnaeus (Podophyllaceae) and *Taxus brevifolia* Nutt. (Taxaceae) (Cragg and Newman. 2005). In recent years, traditional medicine, such as Chinese medicine, Kampo medicine, Ayurveda and so on, are popular treatment for cancer in Asian countries, and these approaches are also accepted increasingly as complementary and alternative therapies for cancer in the rest of the world. A number of scientific evidences at molecular mechanisms and clinical trial showed they have anticancer potential. Most of the medications in traditional medicine are derived from

plants, so we call them herbal medicines (Feng et al. 2011).

Green tea (*Camellia sinensis*), which can also provide catechins, is another product, which is under scrutiny. Although drinking green tea appears to be safe at regular, habitual use and may have some beneficial effects on cancer patients, there is no convincing proof for their cancer preventive effects (Boehm et.al. 2009, Fritz et.al. 2013). Besides, patients on bortezomib therapy should avoid using it. In in vitro studies, cumin and saffron components are shown to have some beneficial effects in tumour cells, but there is no evidence on availability for cancer prevention (Kaefer and Milner. 2008). Lycopene is another popular supplement and its effects on prostate cancer and oral cancers were studied; however no advantage has been reported till date (Ilic et.al. 2011, Lu et.al. 2011). Flavonoids are very common. Based on the literature, they are accepted to have antibacterial, antiviral, anti-inflammatory, anticancer and anti-allergic features (Patil et.al.2013); however, their effects on colorectal neoplasm prevention remain conflicting and unproven (Jin et.al. 2012). Some beneficial effects on leukaemia, as an adjuvant agent, have been reported (Spagnuolo et.al. 2012). Another famous plant, *Panax ginseng*, is known as immune system modulator, anti-

stressor, and antihyperglycemic, but is not proven as cancer preventative agent currently (Changet.al 2003). Aegle marmelos (stone apple) is presumed to have antioxidant activity. Allium cepa (onion) and Allium sativum (garlic) are thought to inhibit cancer cells in addition to their other benefits. Aloe vera is

assumed to have anticancer activity by stimulating the immune system. Ginkgobiloba is a kind of tree that is said to have antioxidant feature (Povind et.al 2011). Brassica leracea (broccoli) and other cruciferous vegetables have been investigated for their potential chemopreventive features. Antioxidant and anticancer activities of phytochemicals are thought to come from their synergistic effects (Liu et.al 2011). This explanation can be true as they cannot prevent cancers alone, and whole vegetables and fruits are needed to decrease cancer incidences. There are many studies in the literature suggesting that all these vegetables and derivatives mentioned earlier are cancer protective. Cancer is one of the areas, in which the use of herbal medicine is very common. Cancer research is a very expensive area. As prevention is easier and cheaper than therapy and rehabilitation, scientists are more interested in this field. Many studies have been conducted to find the best solution for prevention. As

conventional drugs have been accepted as harmful and not very efficient and herbals are considered safe, expectations from herbal drugs are growing(Kaur et.al. 2011).

## **HERB USED FOR DIETARY SUPPLEMENT**

The term 'dietary supplement' is used commonly for a natural product that contains vitamins, minerals, herbs or other botanicals, to supplement the diet (Aggarwal and Shishodia. 2011). Many types of dietary components have been evaluated, either in whole-food forms or as nutritional supplements, to prove beneficial in cancer prevention, treatment and care. According to the literature, specific dietary supplements are not recommended for cancer prevention, though certain populations may benefit from their use. 'Food, Nutrition and the Prevention of Cancer: a global perspective' report suggests that higher consumption of several plant foods protects against cancers. This report defines 'plant-based' as 'diets that give more emphasis to those plant foods that are high in nutrients, high in dietary fibre (and so in non-starch polysaccharides), and low in energy density'. It also supposes non-starchy vegetables and fruits, including broccoli, carrots, turnips and so on, as protective against some cancers and weight control. Although there are pros and cons in the

literature, evidence-based guidelines do not recommend specific dietary supplements for cancer prevention (Deng et.al 2009). They also recommend dietary supplements including botanicals and vitamins and minerals to be evaluated for their harm/benefit ratio including side effects and drug interactions (Ernst. 2000, Walker and Donovan. 2011).

**HERBALS AND DERIVATIVES USED AS A 'ANTICANCER' AGENT** Many of the plants and their derivatives have been under evaluation for their effects in cancer prevention. Among them, there are biologically active components such as curcumin, lycopene, capsaicin, gingerol, catechins, isothiocyanates, isoflavones, vitamin E and C and selenium. Flavonoids, tannins, isoprenoids and phytosterols are commonly investigated. All of these agents are thought to have anti-inflammatory effect that may influence the carcinogenesis. Because 69% of anticancer drugs originated from natural products, searching for new anticancer drugs from herbal medicine is quite understandable (Patil et. al 2013). Tannins are natural constituents of green tea that are thought to prevent cancer by inducing cell death in cancer cells, at certain doses. Isoprenoids are shown to suppress the proliferation of promyelocytic leukaemia cells. Phytosterols are considered as protective

agents against cardiovascular diseases and cancer development. They tend to improve lipid profiles (red clover, soy and flax), arterial compliance (red clover and soy) and bone density (red clover and soy) (Piersen. 2003) Cortés-Jofré et al. analysed drugs for lung cancer prevention and found no evidence for recommending supplements of vitamins A, C, E, and selenium for the prevention of lung cancer and lung cancer mortality in healthy people. On the contrary, they found association between use of beta-carotene and increase in lung cancer incidence among smokers or persons exposed to asbestos (Cortés-Jofré et.al 2003). **CONCLUSION:** Many people expect cure for many diseases from herbal medicine; however, we have to accept that there are pros and cons for herbal medicine as well. People prefer herbal medicine as conventional drugs can be very toxic, while herbs are presumed innocent. Besides, other efforts to prevent cancer are more expensive as compared with the use of plants. Further studies should be conducted on this issue regarding standardisation, possible side effects, drug interactions and personal characteristics.

#### **REFERENCES:**

1. Rao G, Kumar S, Islam M, Mansour S. Folk medicines for anticancer therapy-a current status. *J. Cancer Therapy.* 2008; 6: 913-922.

2. Prema R, Sathish S, Chandrashekhar K. Review on: Herbs as anticancer agents. *Int. J. Pharm & ind. Res.* 2011; 2 (1): 105-108.
3. Cragg G, Newman D. Plants as a source of anti-cancer agents. *J Ethnopharmacol.* 2005; 100: 72-9.
4. Feng Y, Wang N, Zhu M, Feng Y, Li H, Tsao S. Recent Progress on Anticancer Candidates in Patents of Herbal Medicinal Products, Recent Patents on Food. *Nutrition & Agriculture.* 2011; 3, 30-48.
5. Boehm K, Borrelli F, Ernst E, Habacher G, Hung S, Milazzo S. Green tea (*Camellia sinensis*) for the prevention of cancer. *Cochrane Database Syst Rev.* 2009; 3: CD005004.
6. Fritz H, Seely D, Kennedy D, Fernandes R, Cooley K, Fergusson D. Green tea and lung cancer: a systematic review. *Integr Cancer Ther.* 2013; 12(1):7–24.
7. Kaefer C, Milner J. The role of herbs and spices in cancer prevention. *J Nutr Biochem.* 2008; 19(6): 347–61.
8. Ilic D, Forbes K, Hased C. Lycopene for the prevention of prostate cancer. *Cochrane Database Syst Rev.* 2011;11: CD008007.
9. Lu R, Dan H, Wu R, Meng W, Liu N, Jin X. Lycopene: features and potential significance in the oral cancer and precancerous lesions. *J Oral Pathol Med.* 2011;40(5):361–8.
10. Patil S, Chaudhari M, Sapkale P, Chaudhari R. A recent review on anticancer herbal drugs. *Drug Discov Ther.* 2013; 1(6):77–84.
11. Jin H, Leng Q, Li C. Dietary flavonoid for preventing colorectal neoplasms. *Cochrane Database Syst Rev.* 2012;8: 41-48.
12. Spagnuolo C, Russo M, Bilotto S, Tedesco I, Laratta B, Russo G. Dietary polyphenols in cancer prevention: the example of the flavonoid quercetin in leukemia. *Ann NY Acad Sci.* 2012;1259 :95–103.
13. Chang Y, Seo E, Gyllenhaal C, Block K. Panax ginseng: a role in cancer therapy. *Integr Cancer Ther.* 2003;2(1):13–33.
14. Povind G. Some important anticancer herbs: a review. *Int Res J Pharm.* 2011;2(7):45–52.
15. R. Liu. Potential synergy of phytochemicals in cancer prevention: mechanism of action. *J Nutr.* 2004;134(12): 3479S–85S.
16. Kaur R, Singh J, Singh G, Kaur H. Anticancer plants: a review. *J Nat*

- Prod Plant Resour. 2011;1(4):131–6.
17. Aggarwal B, Shishodia S. Molecular targets of dietary agents for prevention and therapy of cancer. *Biochem Pharmacol.* 2006; 71(10):1397–421.
  18. Deng G, Moshe F, Cohen L. Evidencebased clinical practice guidelines for integrative oncology: complementary therapies and botanicals. *J Soc Integr Oncol.* 2009;7(3):85–120.
  19. Ernst E. The role of complementary and alternative medicine in cancer. *Lancet Oncol.* 2000;1:176–80.
  20. Walker P, Donovan J. Herbal remedies: natural caveats. *Int J Dermatol.* 1999;38(10):746–8.
  21. Piersen C. Phytoestrogens in botanical dietary supplements: implications for cancer. *Integr Cancer Ther.* 2003; 2(2):120–38.
  22. Cortés-Jofré M, Rueda J, CorsiniMuñoz G, Fonseca-Cortés C, Caraballoso M, Bonfill Cosp X. Drugs for preventing lung cancer in healthy people. *Cochrane Database Syst Rev.* 2012;10: CD002141.