



Role of herbal medicine in boosting immune system

Samaneh Khodadadi^{1*}

¹Nickan Research Institute, Isfahan, Iran

Correspondence to

Samaneh Khodadadi; Email: sama_khodadadi@yahoo.com

Received 18 December 2014

Accepted 3 January 2015

Published 7 January 2015

Keywords: Herbal drug, Immune system, Cancer

Citation: Khodadadi S. Role of herbal medicine in boosting immune system. Immunopathol Persa. 2015;1(1):e01.



Key point

Treatment with herbal drugs discuss to using a plant's seeds, berries, roots, leaves, bark and flowers due to therapeutic reasons. Using of drugs with herbal origin has a prolonged history of use, outside of conventional medicine. The use of herbal supplements has increased dramatically over the past 30 years.

Introduction

Biological products of animals and plants sources have been used by human for thousands of years either in the pure forms or crude extracts to treat many diseases. Herbs are used as bases of medicine in many ways in human beings in their life. Research interest has focused on various herbs that possess immune-stimulating properties as a useful feature in helping diminish the risk of cancer. In different herbs, a wide-ranging of phytochemicals, have been identified such as the flavonoids, lignans, terpenoids, polyphenolics, sulfides, saponins, carotenoids, curcumins, plant sterols and phthalides. Several of these phytochemicals either inhibit nitrosation or the formation of DNA stimulate the activity of protective enzymes such as the phase II enzyme glutathione transferase. Many of plants contain potent antioxidant compounds that provide significant protection against chronic diseases. These compounds may defend LDL cholesterol from oxidation, inhibit cyclooxygenase and lipoxygenase enzymes, prevent lipid peroxidation, or have antitumor activity (1-3).

How medicinal plants can help immune system?

Plants are rich in flavonoids, vitamin C, or the carotenoids so can enhance immune function. The flavonoid-rich herbs may also possess mild anti-inflammatory action. Their beneficial effect named as anti-inflammatory and as an immune-stimulant action. It can promote the activity of lymphocytes, increase phagocytosis, and induce interferon production. For example garlic is one of the most remarkable plants that can effect

strongly on immune system. Garlic as an immune system booster has been found to exert an immune-potentiating effect by stimulating natural killer cell activity. For example some studies powerfully suggest that garlic is a promising candidate as an immune modifier, which preserves the homeostasis of immune functions (2) because it has a higher concentration of sulfur combinations which are responsible for its therapeutic effects. The chemical components of garlic have also been found for treatment of cancer, diabetes, atherosclerosis and hyperlipidemia (3).

Anticancer activity of herbs

Interest in the use of herbal products has developed dramatically in the world. Some studies suggest an overall occurrence for herbal use from 13% to 63% in patients who suffer from cancer. Beside restricted remedial range associated with most anticancer remedies (4).

Several frequently used herbs have been recognized by the National Cancer Institute as possessing cancer-preventive properties. These herbs are members of the *Allium* family like garlic, members of the Labiatae (mint) family, members of the Zingiberaceae family like ginger and members of the *Umbelliferae* (carrot) family (3). Many herbs contain a wide range of phytosterols, saponins, flavonoids, triterpenes, and carotenoids, which have been shown from studies of legumes, fruit, and vegetables to be cancer chemo-protective. These beneficial substances act as antioxidants and electrophile hunters, stimulate the immune system, inhibit hormonal actions and metabolic pathways allied with the development

of cancer, inhibit nitrosation and the formation of DNA adducts with carcinogens, and induce phase I or II detoxification enzymes (5). In herbs, terpenoids present a chemical defense against environmental stress and provide a repair mechanism for injuries. Attractively, effective ingredients in several plant-derived therapeutic extracts are terpenoid, complexes of monoterpenoid, sesquiterpenoid, diterpenoid, triterpenoid and carotenoid groups. Cancer and inflammatory disorders are regular therapeutic indications of traditional medicines. Hence conventional medicine defends from studies which have demonstrated that plant-derived terpenoid components may suspend the major regulator (nuclear factor- κ B signaling) in the pathogenesis of inflammatory diseases and cancer (5).

Natural products represent a rich reservoir of potential small chemical molecules exhibiting antiproliferation and anticancer properties. Transcriptional regulation of some oncogene and carcinogenesis-related gene expression besides dealing with DNA and RNA are similarly well documented. More importantly, the suppression of tumor growth, the beneficial usage in composed medication, and the improvement of multidrug resistance both in vivo and in vitro obviously indicate its ability as an alternative medication for tumor chemotherapy (6).

Conclusion

From 1982 to 2002 most of the new chemical compounds endorsed were derived directly or indirectly from natural products. Traditional medicine has been a productive resource for revealing novel lead molecules for modern drug discovery. It is thought that plants have launched a

terpene-based host defense during evolution which also shows a cornucopia of effective remedial compounds for common human diseases. Consequently, natural products derived from medicinal herbs are potential candidates for anti-cancer and immune boosting therapeutic drugs.

Author's contribution

SK was the single author of the paper.

Conflicts of interest

The author declared no competing interests.

Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the author.

Funding/Support

None.

References

1. Craig WJ. Health-promoting properties of common herbs. *Am J Clin Nutr.* 1999;70:491s-9s.
2. Kyo E, Uda N, Kasuga S, Itakura Y. Immuno modulatory Effects of Aged Garlic Extract. *J Nutr.* 2001;131:1075S-9S.
3. Gebreyohannes G, Gebreyohannes M. Medicinal values of garlic: a review. *Int J Med Sci.* 2013;5:401-8.
4. Sparreboom A, Michael CC, Milin RA, William DF. Herbal remedies in the United States: potential adverse interactions with anticancer agents. *J Clin Oncol.* 2004;22:2489-503.
5. Salminen A, Lehtonen M, Suuronen T, Kaarniranta K, Huuskonen J. Terpenoids: natural inhibitors of NF- κ B signaling with anti-inflammatory and anticancer potential. *Cell Mol Life Sci.* 2008;65:2979-99.
6. Sun Y, Xun K, Wang Y, Chen X. A systematic review of the anticancer properties of berberine, a natural product from Chinese herbs. *Anticancer Drugs.* 2009;20:757-69.