



AN OVERVIEW OF THERAPEUTIC POTENTIAL OF PHYTOCHEMICAL CONSTITUENTS FROM ENDEMIC MEDICINAL PLANTS

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INTRODUCTION

Traditional system of medicinal consists of large number of plants with various medicinal and pharmacological importances and hence represents a priceless tank of new bioactive molecules. Medicinal plants and derived medicine are widely used in traditional cultures all over the world and they are becoming increasingly popular in modern society as natural alternatives to synthetic chemicals (Vanwyk and Wink, 2009). At the present juncture, the modern conventional healthcare is burdened with great problems of unsafe medicines, chronic diseases, resistant infections, auto immune disorders and degenerative disorders of ageing, despite great scientific advances. More than 70% of India's 1.1 billion Populations still use these non-allopathic systems of medicine. India possesses almost 8% of the estimated biodiversity of the world with around 0.126% million species (Jain *et al.*, 2006).

The plant kingdom is considered as an asset for various kinds of potential drugs. In historic days, many of the diseases were cured using plant products and now, there is again a growing awareness among people about the significance of plants and their medicinal values (Gullo and Hughes, 2005). An original part of familial medicine is herbal medicine. In 2008, according to the World Health Organization, more than 80% of the world's population went back to traditional medicines (Vital and Rivera, 2009). Medicinal plants are the richest natural possessions for the finding of new drugs. These medicinal plants possess certain phytochemical compounds which act as ailments for the infective diseases like bacterial, fungal, viral and cancer disorders (Krishnamoorthi, 2015).

India has always been a treasure island to various civilizations of the world. The unexplored diversity of flora of the country has played a major role in the introduction of various forms of medicinal systems by the

people of these varied regimes. Siddha, Unani, Ayurvedha etc had long been in practice in our land and have been inseparable from the life of our ancient men. These indigenous systems of medicine have been part and parcel of the normal life of man. They helped to keep up the human health and also to lead a happier life. The constituents of these systems were basically plant parts, whose effectiveness came to light by repeated trial and error methods. These have been documented in many of our ancient literatures which are serving as valuable treasures to the society.

Medicinal plants in treatment of various ailments

At the present juncture, the modern conventional healthcare is burdened with great problems of unsafe medicines, chronic diseases, resistant infections, auto immune disorders and degenerative disorders of ageing, despite great scientific advances. More than 70% of India's 1.1 billion Populations still use these non-allopathic systems of medicine. India possesses almost 8% of the estimated biodiversity of the world with around 0.126% million species (Jain *et al.*, 2006).

Natural therapies such as the use of plant derived products may reduce adverse side effects and the compounds in plants have protective effects against environmental mutagens, carcinogens and endogenous mutagens (Mastan *et al.*, 2007; Desai *et al.*, 2008). Almost all the medicinal plants accessible in the world have huge potential sources for finding as well as protection of new drugs of benefit to mankind. Currently, there are a lot of approaches to be had to reach for new nature active ingredients in the medicinal plants for the preparation of safe drugs. Scientifically many works have been exhausted to evaluate and discover new antimicrobial, antioxidant and antifungal ingredients from different kinds of natural sources like soil, microorganisms, plants and animals (Nagesh *et al.*, 2012).

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Herbs and spices are known for their antimicrobial and antioxidative properties. Due to an increasing demand for natural food additives, herbs and spices have emerged as popular ingredients and have a tendency of replacing synthetic antimicrobial and antioxidant agents (Burt, 2004). Natural antioxidants from plants have attracted significant interest because of their safety and potential nutritional and therapeutic effects. Several plant materials have been investigated as a potent source of antioxidants. Antioxidants in herbs and spices include: vitamins; phenolic compounds including flavonoids and phenolic acids; and volatile compounds (Carrubba and Calabrese, 1998).

Bioactive compounds from medicinal plants

Generally, the whole plants in crude forms show higher efficacy than the plant products in semi crude or pure form (Sanaa *et al.*, 2007). The phytochemical constituents of the plants heal and cure human diseases and these constituents are non-phytotoxic and hence readily biodegradable (Nostro *et al.*, 2000). Both primary and secondary metabolic compounds forms phytochemicals, wherein the primary constituents include common sugars, protein and chlorophyll, and the secondary compounds are alkaloids, flavonoids, terpenoid, phenolic compounds, tannins, glycosides, gums and essential oils (Krishnaiah *et al.*, 2007). Most of the active components are found powerful in the storage organs of the plants (Sony *et al.*, 2011). These active secondary metabolic compounds resolve the medicinal properties of the plants (Karou *et al.*, 2006).

Medicinal plants are a rich source of bioactive compounds (Toussaint *et al.*, 2007), and these are thought to be safe to human beings and the environment compared to the synthetic medicines for the treatment of cancer and many other diseases (Nema *et al.*, 2013). The use of medicines of plant origin has a long tradition in Europe and Asia such as traditional Chinese medicine, Indian Ayurvedic medicine and herbal medicine. More than 600 medicinal plants, comprising more than 30 % of known plant species, are recorded in the Chinese MateriaMedica, citing the first use of medicinal herbals in China as early as 1100 BC (Cragg *et al.*, 1997; Joy *et al.*, 1998).

The antioxidant activity of phenolic compounds is mainly dependent on their redox properties that allow them to act as reducing agents, hydrogen donors and singlet oxygen quenchers. Additionally, they have a metal chelating potential (Rice-Evans *et al.*, 1995).

Will reveal only a very narrow spectrum of its constituents. Historically pharmacological screening of compounds of natural or synthetic origin has been the source of innumerable therapeutic agents (Gerhartz *et al.*, 1985). The medicinal value of plants lies in some chemical substances that produce definite physiological action on the human body. The important bioactive compounds of plants are alkaloids, flavonoids, tannins and phenolic compounds (Edeoga *et al.*, 2005).

If this trend prevails, greater plant biomass will be at the dispense of drug manufacturers for the preparation and formulation of effective drugs from these medicinally important plants for the prophylaxis of various ailments

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