ANTIBACTERIAL PROPERTIES OF PLANTS

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ABSTRACT

Phyto-constituent which has been studied more is alkaloids and steroidal sapogenins, and other phyto components such as flavonoids, tannins, unsaturated sterols, terpenoids. Nowadays, people around the world prefer to use the natural products in curing and prevention of certain diseases due to its fewer side effects and ecologically safe. In this review antibacterial properties of plants have been highlighted. Approximately, over 750,000 species of plants are found on earth out of which only few of the species have been studies so far. In today’s scenario pharmacology studies is based on isolation and identifying active constituent from plant and extracting its medicinal potential. Scientists from all over the world have validated the efficacy of medicinal plants.

Keywords: Phyto-constituents, alkaloids, medicinal plants, and antimicrobial

INTRODUCTION

Medicine originated from India has a long history, and is considered as one of the oldest well organized medicinal structure. The concept of Indian medicinal system was first mentioned in the writings in Vedas. Since, the ancient times herbs and plants have been utilized for its medicinal properties throughout the world. As mentioned in various writings most of the people in ancient era rely on the natural remedy for therapeutic properties [1]. Plant extract possessing therapeutic potential was used for the production of drugs and thereby these plants were considered as medicinal plant. There are many examples of plants that can be considered for medicinal purpose which includes garlic, fox glove, and opium poppy [2]. The main purpose of utilizing natural sources is that they possessed the similar therapeutic effect comparable to chemically synthesized drugs but with negligible side effects [1]. During last two decades advancement in phyto-chemistry had been observed and different phyto constituents had been identified with their medicinal properties. For instance, quercetin one of the major flavonoid present in the onion compound showed the antimicrobial activity [3]. The implication of herbal plants is not only mentioned in Vedas but also mentioned by Chinese emperor Shen Nong in authoritative treatise on herbs. He recommended the use of Ma Huang (known as ephedra) against respiratory disorders. The constituent extracted from it is ephedrine that is widely used as a decongestant. Besides its natural form, its synthetic composition namely pseudoephedrine is produced by pharmaceutical companies in treatment of allergy, sinus, and cold-relief.

Medicinal plants are widely used in developing countries as an alternative treatment to cure many diseases. During in vitro an in vivo studies by many scientists it was found that plant extract and essential oil isolated from plants has the potential to have medicinal property mainly antimicrobial [4]. Plant in a whole is considerable for its medicinal potential including roots, barks, stems, leaves and seeds [5]. These plant extracts are the main source for the development and production of many potent drugs. The antimicrobial activity of medicinal plants was evaluated by studying food borne pathogen. The medicinal potential of a
medicinal plant is because of the constituents present in its extract or essential oil. These phyto-constituents can be classified into alkaloids, steroids, tannins, flavonoids, and terpenoids.

**ANTIMICROBIAL PROPERTIES**

The major activity in medicinal plants which is studies most is their antimicrobial properties. The compound obtained from *Parthenium argentatum* was detected for its antimicrobial activity against the species of *Candida*, *Torulopsis*, *Hansemula* *pneumoniae* and *P. aeruginosa* [6]. Furthermore studies were done to study the antimicrobial potential of the extracts isolated from plants. In this study, nine plants in Uruguay were selected against different species of *C. albicans* and *Saccharomyces cerevisiae*, *Bacillus subtilis*, *E. coli* and *P. aeruginosa*. The plant extract showed the antimicrobial potential towards *B. subtilis*, *E. coli* and *P. aeruginosa* only by inhibiting the growth of microbes [7]. Apart from anti-bacteriology, antifungal activity of the plants were studied and found that extracts from *Eucaliptus spp.* inhibited the growth of soil fungi [8]. Essential oil of *Oregano* also showed the antimicrobial activity against food-spoiling yeast tested by solid medium diffusion method and Microplate bioassay. This technique reveals that oil inhibits the growth of *P.minuscula* most and *S. cerevisiae* [9].

Another study was done on essential oils obtained from the leaves of *Croton triangularis* and found active agent as antibacterial and antifungal [10]. In other study ethanol extract of *Combretum duarteanum* and *Arthemus sativa* showed antimicrobial activity against different bacterial and fungal species [11][12]. The antimicrobial activity of *Mikania triangularis*, was reported against *Bacillus cereus*, *E. coli*, *P. aeruginosa*, *S. aureus* and *S. epidermidis* [13]. Apart from the plant extract, effects of individual phytochemical were also studied [14] and found antimicrobial activity of anacardic acid against different strains of bacteria. Later, the combination of anacardic acid and totarol was studied on methicillin resistant strains of *S. aureus* (MRSA) and synergistic effect of the compound in regards with methicillin was observed [15]. *Cryptococcus neoformans* is the pathogen which cause the fungal infection called cryptococcosis which effect the immune system of the individual thus to cure this carvacrol was treated against the fungus and it was observed that it destabilize the membrane of fungal and inhibits its growth [16]. Plant extracts have a great potential as antimicrobial compounds, extracts of 120 plants species from 28 different families were studied for its antimicrobial property [17][18].

**CONCLUSION**

In spite of recent advances in chemical technology, medicinal plants and its constitute will continue to play a major role in development of drugs and medical therapy. The reason behind this is its manufacturing costs which is cheaper as compared to synthetic drug production. The demand of natural herbs is increasing globally by different pharmaceutical industries because of harmful effects caused by the chemically derived drugs. Apart from its medical application natural products are also used in production of perfumes and food additives because of its aroma. Moreover, medicinal plants are easy to cultivate, they can grow on marginal lands and relatively free from cattle damage. Since many species and their constituents are still unknown for its medicinal properties, there is a scope to identify and study different plant species for its medicinal property.

**REFERENCE**


