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Herbal Medicine- A Rational Approach in Health Care System

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ABSTRACT

Medicinal herbs as potential source of therapeutics aids has attained a significant role in health system all over the world for both humans and animals not only in the diseased condition but also as potential material for maintaining proper health. Determining the biological (activity) properties of plants used in traditional medicine is helpful to the rural communities and informal settlements. Several scientific investigations are currently being undertaken to isolate the active compounds by bioassay-guided fractionation from the species that showed high biological activity during screening. A number of scientific investigations have highlighted the importance and the contribution of many plant families i.e. Asteraceae, Liliaceae, Apocynaceae, Solanaceae, Caesalpinaceae, Rutaceae, Piperaceae, Sapotaceae used as medicinal plants. Medicinal plants play a vital role for the development of new drugs. This article reviews some of the past and current successes of the herbal drug approach in prevention and treatment of various incurable and life threatening diseases.

Keywords: Traditional Medicine, Biological Activity, Bioassay-Guided Fractionation.

1. Introduction

Medicinal plants play an important role in the development of potent therapeutic agents. Today estimate that about 80 % of people in developing countries still relays on traditional medicine based largely on species of plants and animals for their primary health care. Herbal medicines are currently in demand and their popularity is increasing day by day. About 500 plants with medicinal use are mentioned in ancient literature and around 800 plants have been used in indigenous systems of medicine. Herbal drugs referred as plants materials or herbals, involves the use of whole plants or parts of plants, to treat injuries or illnesses [1]. Herbal drugs are use of therapeutic herbs to prevent and treat diseases and ailments or to support health and healing [2]. These are drugs or preparations made from a plant or plants and used for any of such purposes. Herbal drugs are the oldest form of health care known to mankind [3]. World Health Organization (WHO) has distinct herbal drugs as complete, labeled medicinal products that have vigorous ingredients, aerial or secretive parts of the plant or other plant material or combinations. World Health Organization has set precise guidelines for the evaluation of the safety, efficacy, and quality of herbal medicines [4]. Herbal drug is a chief constituent in traditional medicine and a common constituent in ayurvedic, homeopathic, naturopathic and other medicine systems. Herbs are usually considered as safe since they belong to natural sources [5]. The use of herbal drugs due to toxicity and side effects of allopathic medicines, has led to rapid increase in the number of herbal drug manufacturers. For the past few decades, herbal drugs have been more and more consumed by the people with no prescription. These drugs have survived real world testing and thousands of years of human testing. Some drugs have been discontinued due to their toxicity, while others have been modified or combined with additional herbs to counterbalance side effects [6].

a. Advantages of Herbal Drugs

- high Low/Minimum cost
- complete accessibility
- enhanced tolerance
- More protection
- fewer side-effects
- Potency and efficiency is very high.

b. Disadvantages of Herbal Drugs

- Not able to cure rapid sickness and accidents
- Risk with self-dosing
- Complexity in standardizations

2. Importance of plants as a source of new drugs

The development of traditional medicinal systems incorporating plants as means of therapy can be traced back to the Middle Paleolithic age some 60,000 years ago as found from fossil studies [7]. In recent times, developed countries are turning to the use of traditional medicinal systems that involve the use of herbal drugs and remedies18 and according to the World Health Organization (WHO), almost 65% of the world's population has incorporated the value of plants as a methodology of medicinal agents into their primary modality of health care . It is often noted that 25% of all drugs prescribed today come from plants [8], [9].

This estimate suggests that plant-derived drugs make up a significant segment of natural product– based pharmaceuticals. Out of many families of secondary metabolites, or compounds on which the growth of a plant is not dependent, nitrogen-containing alkaloids have contributed the largest number of drugs to the modern pharmacopoeia, ranging in effects from anticholinergics (atropine) to analgesics (opium alkaloids) and from antiparasitics (quinine) to anticholinesterases (galantamine) to antineoplastics (vinblastine/vincristine) [10] . Although not as plentiful as alkaloids in the modern pharmacopoeia, terpenoids (including steroids) have made an equally important contribution to human health. They range from Na+/K+ Na^+ K^+ pump- inhibiting cardiac glycosides from Digitalis spp [11], antineoplastic paclitaxel to antimalarial artemisinin. To anti-inflammatory triptolide [12].

3. Therapeutic Activities of Herbal Drugs

a. Anticancer activity

Medicinal plant products exhibiting anticancer activity continue to be the subject of extensive research aimed at the development of drugs for the treatment of different human tumors. The medicinal plants used for the treatment of cancer are *Acalypha fruticosa, Alangium lamarki, Catharanthus roseus, Celastrus paniculatus, Embelia ribes, Ficus glomerata, Ficus racemosa, Ocimum basilicum, Plumbago zeylanica, Terminalia chebula, Tylophora indica, Wrightia tinctoria.* The extracts used for the treatment of breast cancer is *Buthus martensi, Colla cornu, Herba epimedii, Fructus lycii, Radix angelicae, Radix bupleuri, Rhizoma corydalis, Rhizoma curculiginis, Radix paeoniae , Radix glycyrrhizae, Scolopendra subspinipes, Squama manitis, Tubercurcumae.* The herbal drugs used for treatment of pancreatic cancer *are Emblica officinalis, Nigella sativa* and *Terminalia belleric* [13], [14].

b. Antidiabetic activity

A variety of herbal plants with antidiabetic activity are *Abroma augusta, Acacia melanoxylon, Acacia modesta, Acacia nilotica, Aconitum ferox, Adhatoda vasika, Adiantum capillus, Adiantum incisum, Agrimonia eupatoria, Allium sativum, Aloe barbadensis, Althaea officinalis, Apium graveolens, Arctium lappa, Commiphora abyssinca, Embilica officinalis, Eucalyptus globules, Ginseng panax, Gymnema sylvestre, Inula helenium, Juniperus communis, Medicago sativa, Nigella sativa, Orthosiphon stamineus, Panex quinquefolius, Polygala senega, Plantago ovata, Punica granatum, Salvia officinalis, Scoparia dulcis, Tanacetum vulgare, Taraxacum officinale, Tecoma stans, Trifolium alexandrinum, Trigonella foenum, Turnera diffusa, Urtica, dioica, Xanthium strumarium, Zea mays and Zingiber officinale, Annona squamosa* [15].

c. Analgesic activity

The extracts of *Bougainvilla spectabilis, Chelidonium majus, Ficus glomerata, Dalbergia lanceolaria, Glaucium grandiflorum, Glaucium paucilobum, Nepeta italic, Polyalthia longifolia, Sida acuta, Stylosanthes fruticosa, Toona ciliate, Zataria multiflora* and *Zingiber zerumbet* are used as analgesic agents [16].

d. Antifertility activity

Plant drugs are a primary source of naturally occurring fertility regulating agents because of their little or less side effects. The plants that have been reported to have antifertility activity are *Amaranthus retroflexus, Artabotrys odoratissimus, Barberis vulgaris, Carica papaya, Dieffenbachia seguine, Evodia rutacapra, Fatsia horrid, Ferula assafoetida, Hibiscus rosasinensis, Lonicera ciliosa, , Magnolia virginiana, Mardenia cundurango, Pisum sativum, Podophyllu peltatum, Punica granatum, Raphanus sativus, Rehmannia glutinosa, Semecarpus anacardium, Sesbania sesban, Stemona japonica, Thuja occidentalis, Taxus baccata* and *Verbena officinalis* [17].

e. Antipsoriasis activity

A variety of natural proprietary formulas and preparations containing plant materials have been used to provide symptomatic relief in psoriasis. The different herbal remedies for psoriasis are, turmeric, curcumin, shark cartilage extract, oregano oil, milk thistle. Various antimicrobial agents *Azadirachta indica, Calendula officinalis, Cassia tora, Wrightia tinctoria have been used in the management of* psoriasis [18].

f. Antidipressive activity

A number of nutritional and herbal supplements have shown promise as alternative treatments for depression. A large number of plants have potential functions to treat depression which are described as, *Bacopa monniera, Panax quinquefolius, Piper methysticum, Rhodiola rosea, Valeriana officinalis and Hypericum perforatum* [19].

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g. *Hepatoprotective* activity

A large number of plants and formulations have been claimed to have hepatoprotective activity. Nearly 160 phytoconstituents from 101 plants have been claimed to possess liver protecting activity.They are mainly *Coccinia grandis Flacourtia indica, Silybum marianum, Annona squamosa, Solanum nigrum,Chamomile capitula, Wedelia calendulacea* etc [20].

h. Herbs for Dental care

The plants having the dental care properties are *Acacia catechu, Acacia arabica, Althea officinalis, Anacyclus pyrethrum, Azadirachta indica, Barleria prionitis, Cinnamomum camphora, Cuminum cyminum, Eucalyptus globules, gardenia gummifera, Holarrhenia antidysenterica, Jasminum grandiflorum, Juglans regia, Pistacia lentiscus, Pterocarpus marsupium, Punica granatum, Salvadora persica, Salvia officinalis, Solanum xanthocarpum, Symplocos racemosa, Syzygium aromaticum,* All these plants playan important role in suppressing the dental problems [21].

4. Future Prospects of Herbal Medicine

It is estimated that nearly three fourths of the herbal drugs used worldwide were discovered following leads from local medicine. According to WHO about 25% of modern medicines are descended from plants first used traditionally. Many others are synthetic analogues built on prototype compounds isolated from plants. Almost, 70% modern medicines in India are derived from natural products. Proper utilization of these resources and tools in bioprospecting will certainly help in discovering novel lead molecules from plants by employing modern drug discovery techniques and the coordinated efforts of various disciplines. Tribal healers in most of the countries, where ethnomedical treatment is frequently used to treat cut wounds, skin infection, swelling, aging, mental illness, cancer, asthma, diabetes, jaundice, scabies, eczema,venereal diseases, snakebite and gastric ulcer, provide instructions to local people as how to prepare medicine from plants.They keep no records and the infor mation is mainly passed on verbally from generation to generation . World Health Organization (WHO) has shown great interest in documenting the use of medicinal plants used by tribals from different parts of the world. Many developing countries have intensified their efforts in documenting the ethnomedical data on medicinal plants. Research to find out scientific evidence for claims by tribal healers on Indian herbshas been intensified. Once these local ethnomedical preparations are scientifically evaluated and disseminated properly, people will be better informed regarding efficacious drug treatment and improved health status [22], [23].

5. Standardization of Herbal Drugs

Herbal drugs imply knowledge and practice of herbal healing for the prevention, diagnosis, and elimination of physical, mental, or social imbalance. The costs for health care are rising at an alarming rate throughout the world. At the same time, the world market for phytopharmaceuticals is growing progressively. The World Bank estimates that trade in medicinal plants, botanical drug products, and raw materials are growing at an annual rate of between 5 and 15 %. It is a common observation that people diagnosed with incurable chronic disease states such as diabetes, arthritis, and AIDS turned to herbal therapies for a sense of control and mental comfort from taking action. Herbal product studies cannot be

Considered scientifically valid if the product tested has not been authenticated and characterized in order to ensure reproducibility in the manufacturing of the product in question. Standardized herbal products of consistent quality and containing well-defined constituents are required for reliable clinical trials and to provide consistent beneficial therapeutic effects. Pharmacological properties of an herbal formulation depend on phytochemical constituents present therein. Development of authentic analytical methods which can reliably profile the phytochemical composition, including quantitative analyses of marker/bioactive compounds and other major constituents, is a major challenge to scientists. Without consistent quality of a phytochemical mixture, a consistent pharmacological effect is not expected [24], [25].

6. Conclusion

Medicinal herbs as potential source of therapeutics aids has attained a significant role in health system all over the world for both humans and animals not only in the diseased condition but also as potential material for maintaining proper health. Research to find out scientific evidence for claims by tribal healers on Indian herbs has been intensified. Once these local ethnomedical preparations are scientifically evaluated and disseminated properly, people will be better informed regarding efficacious drug treatment. Determining the biological activity properties of plants used in traditional medicine is helpful to the rural communities and informal settlements. Several authors are currently being undertaken to isolate the active compounds by bioassay-guided fractionation from the species that showed high biological activity during screening. Therefore, these scientific investigations may be utilized to develop herbal drugs for these diseases and improved health status [26], [27].

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