INTRODUCTION
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Plants have always been a major component of traditional system of healing in developing countries, which have also been an integral part of their history and culture. Medicinal plants offer alternative remedies with tremendous opportunities. Many traditional healing herbs and plant parts have been shown to have medicinal value especially in the rural areas and that these can be used to prevent and cure several human diseases. Even to day, majority of the world population depends on herbal healthcare practice. The strategic importance of reviving indigenous medical practices to provide safe and affordable primary healthcare to the people of the world is now recognized. During the last two decades or so, WHO’s health Assembly has passed a number of resolutions in response to this resurgence of interest in the study and use of traditional medicines and in recognition of the importance of medicinal plants to health care of people in many developing countries (Subramoniam, 2001).

India has rich medical heritage with a large number of traditional practices, systems and medicines as a part of its total health care scenario, some of them are more than 3,000 years old. In spite of remarkable
achievements of modern medicines and research, these ancient systems continue to play a major role in the control or alleviation of diseases.

The total number of prescription dispensed in public pharmacies in U.S.A had consistently contained about 25% of plant derived drugs. In Africa, 80% of the prescription depends mainly on herbal medicine and this situation is likely to continue (Bickmann, 1984).

Traditional systems of medicine, whether they are of Indian, Chinese, Tibetan, Thai, Vietnamese and other origins, have evolved over several hundreds or thousands of years through transfer of knowledge, usage, and practices from generation to generation. These systems utilize the resources of plant and animal kingdom. Plants are the major source among them, as they are a treasure house of potential drugs.

The Indian systems of medicine use around 8,000 species of plants which include trees (33%), herbs (32%) shrubs (20%), climbers (12%) and epiphytes, grasses, lichens, ferns and algae put together (3%). Among 2,000 drugs being used in curing human ailments in India, only 200 are of animal origin, 300 of mineral origin and the rest 1500 drugs are extracted from various plants (Agarwal and Ghosh, 1985).
Modernization is posing serious threats to medicinal plants and associated systems. Public are attracted to the modern system of medicine, which provides quick relief, at lower cost. But, in recent times, there has been an increasing awareness about the significance of medicinal plants and their use. There has been revival of interest in knowing about many medicinal plants and their by-products which are inherently safer and more efficacious than the modern, potent synthetic drugs which very often produce undesirable side effects in man. This prompted the people to return to the ancient and traditional system of phyto-medicines or herbal medicines. With the result, the use of natural medicines or herbal drugs has gained momentum and the demand for herbal raw drugs and other products is increasing many fold.

However, the great block in promoting the use of herbal drugs are the lacking of the scientific evaluation and standardization. Further, confusion in the identification of medicinal plants and their substitutes, adulteration, lacking of valid and reliable scientific information for their therapeutic efficacy are some of the major problems concerned.

Standardization of herbal medicines and quality control of the plant raw materials used as phyto – drugs are the most important challenges in
bringing any of the acceptances of concerned people. In 1991, WHO has brought out guidelines for the assessment of herbal medicines with the objective of defining basic criteria for the evaluation of quality, safety and efficacy of phyto-drugs. The assessment includes assessing the crude raw drugs, preparation, finished product and stability studies and their biological activity.

Pharmacognosy means knowledge of drugs which is mainly concerned with naturally occurring substances. This term was introduced by C.A Seydlar in 1815 in his work entitled ‘Analecta Pharmacognostica’ (Trease and Evans, 1983). This term is derived from two Greek works namely ‘Pharmakon’ drug and ‘Gnosis’ – Knowledge. It is defined as an applied science that deals with the biological, biochemical and economic features of natural drugs and their constituents (Tyler et al., 1981). Natural drugs are originated either from plant or animal source.

In the earlier days, only the morphological characters were used to identify the drug. But now, Pharmacognosy had developed mainly on the botanical side which is concerned with the description and identification of drugs both in whole and powdered state. Therapeutic efficacy of herbal
drugs depends upon the quality and quantity of the active compounds that they contain.

**USEFULNESS OF PLANTS IN THERAPY**

It is generally believed that around 25% of the active compounds used in modern medicines were derived from plants. At the same time, hardly 5000 of the over 2,50,000 flowering plants have been looked at scientifically for their medicinal properties.

Many of the early plant based drugs such as curare as a muscle relaxant, quinine from *Cinchona* Species for malaria, reserpine from *Rauwolfia serpentina* for hypertension, digitoxin from *Digitalis* for heart ailments the whole range of steroids from diosgen which in turn is obtained from *Dioscorea* tubers, all are still in use. They have been supplemented by vincristine and vinblastine from *Catharanthus roseus*, etoposide from *Podophyllum* species, the toxoids from *Taxus brevifolia* and *Taxus baccata* as anticancer agents and artemesinin from *Artemisia annua* as a antimalarial.

A number of new products are in the market or under development for indications as wide ranging as flu, asthma, herpes, ectopic dermatitis, diabetes mellitus, wound healing, etc. Many plants extracts have also been approved for use even in western Markets, such as Gingkolides from *Gingko*
biloba for cerebral ischemia as sedative. Forskolin from Coleus forskoli from India developed initially for granuloma and as an inotropic agent.

ENTRY OF NUTRACEUTICALS

The US market was flooded with various plant products through the OTC route and health food stores for a long period of time. A large number of products used as drug in traditional medicines, particularly in the orient were introduced as nutritional supplements.

The term ‘neutraceutical’ refers to foods or extracts thereof claimed to have a medicinal effect on human health. Neutraceutical products as substitute for synthetic vitamins, minerals and other nutrients were further accentuated by the emergence of ‘antioxidants’ as a class of health products (Kusum Devi et al., 2002). In India, many physicians are trying to understand neutraceuticals and herbal products in the modern medical frame of reference.

APPROACH TO USE OF PLANTS IN MEDICINE

The Indian, Chinese, Tibetan and other oriental systems use plants as medicine, as whole plant or as their extracts. These systems also use drugs with multiple plants in their galenic forms with very elaborate processing,
often time consuming custom – made, for specific disease conditions and patients. This approach has been justified by invoking immuno modulation as a possible mechanism of action with multiple plant compounds and synergistic fashion to ensure therapeutic efficacy and minimal toxicity. Plant and plant-based drugs are non-toxic and have little side effects.

**PLANTS AS LEADS TO DISCOVERY OF NEW DRUGS**

In approach comparable with the current new drug discovery process is to use plants as sources of active molecules. From whole medicinal plant, man has developed method to extract the essence and then to purify the active compounds. This approach has led to successful development of many molecules and is in common use even today.

Strychnine, brucine, reserpine, quinine, quinidine, ajmaline, vinca alkaloids, taxol, artemesinin and a host of other products have come through this route. From these purified compounds or molecules a number of new compounds have been derived and used in a variety of diseases. A number of semisynthetic drugs have become major drugs for many disease conditions. Thus the entire field of hormonal steroids has come out as chemical modification of diosgenin, a product obtained from *Dioscorea* tubers or the Mexican yam. The Chinese product artemisinin has been
converted to less toxic artmether and artether. In all the cases, the discovery of these new derivatives was made possible, only due to the fact that original plants had shown activity, even if it was low and hence was it was only a lead. (Darshan and Doreswamy, 1998).

Based on the scientific and traditional knowledge, a rational approach is being the phytochemicals from established herbals were also used as chemical models to synthesize modern drugs. Bromhexine, a synthetic mucolytic agent for cough preparation, has been developed from viscine an alkaloid obtained from *Adathoda Vasica*. Quinine is a natural product of *Cinchona* bark and appeared in London Pharmacopoeia in 1677 to cure malaria based on the quinine structure. At present, hundreds of synthetic analogues from herbal plants were prepared and available in the market.

**CONCLUSION**

Quality control of the plant raw materials is the most important challenge in bringing any of the traditional medicines or modern phyto medicines to the acceptance of concerned people. The major problem in quality control of herbal drugs is the lack of pharmacopoeial standards for all medicinal herbs used in herbal preparations. Recently published Indian herbal pharmacopoeia contains only a few (32) medicinal plants. Whereas
Indian Herbal medicine manufacturers use about 500 medicinal plants in their preparations. It is evident that even botanical identity of many herbs used in medicinal preparations is not known or erroneously quoted.

A single plant has different vernacular names and many herbs have single vernacular name in different parts of India. Another problem is the batch to batch variations in prepared herbal medicines. The quality of medicinal compounds could also differ depending on soil conditions, nutritional status, climatic conditions, seasonal variations, diurnal variations and their association with other organisms. These variations occur in both quality and quantity of biological active compounds.

Determining the specific ecotype of each medicinal plant for maximal therapeutic value by pharmacological and toxicological evaluation is an important gap which remains to be filled in developing quality and safer herbal medicines. The most appropriate ecotype of medicinal plant should be used for drug development. If conventional cultivation under optimum ecological conditions are not promising, tissue culture and other biotechnological methods should be followed.

With one of the largest reservoirs of bioresources, it is imperative that India develops a concerted, integrated, structured and modern approach in
this area and gain a competitive edge in the international market for the
discovery and development of plant based drugs, because for a variety of
diseases remedies are not available.

**SELECTION OF PLANTS**

Among the therapeutically important phyto-chemicals, the polyphenols constitute a distinctive group. The largest and the most widespread class of polyphenolics is the flavonoids. Flavonoids are reported to possess the unique property of being anti-inflammatory, antinociceptive and antiulcerogenic. Wasfi et al (1995) reported that medicinal plants containing flavonoids and triterpenes act as anti-diabetic, anti-inflammatory and diuretic.

Inflammation, a fundamental protective response, may be harmful in condition such as life threatening hypersensitive reactions to insect bytes, drugs, toxins and in certain chronic diseases like rheumatoid arthritis, atherosclerosis and lung fibrosis. The prolonged use of both steroidal and non-steroidal anti-inflammatory drugs is well known to be associated with peptic ulcer formation.

Diuretics represent one of the most widely-prescribed categories of drug in the world. They are used in renal dropsy, pulmonary diseases,
hepatic ascites, nephritic syndrome, hypertension, oedema of pregnancy and so on. At the same time, many diuretics produce serious side effects such as diabetonic effect, electrolyte imbalance, impotence, hyperuricemia and increasing the amount of cholesterol and triglycerides in plasma leading to arthrosclerosis (Evart and Swingard, 1980).

Therefore, the search of new anti-inflammatory and diuretic agents that retain therapeutic efficacy and yet are devoid of these adverse side effects is justified. Medicinal plants could provide a useful source in this regard. Based on the literature, it was found that pharmacognostical, phytochemical and pharmacological work on *Pedalium murex* and *Martynia annua* was lacking. Hence, the present investigation was carried out with the following objectives:

1. To study Pharmacognosy of *Pedalium murex* and *Martynia annua* and to establish pharmacognostical standards.

2. To find out phytochemical profiles of *Pedalium murex* and *Martynia annua* by phytochemical screening.

3. To undertake pharmacological evaluation of *Pedalium murex* and *Martynia annua* through studies on anti-inflammatory, diuretic and anti-microbial activities.