1. INTRODUCTION

1.1 Introduction to the Indian system of medicine

India has a rich culture of medicinal herbs and spices, which includes about more than 2000 species and has a vast geographical area with high potential abilities for Ayurvedic, Unani, Siddha traditional medicines but only very few have been studied chemically and pharmacologically for their potential medicinal value.\(^1,2\)

Human beings are using the medicinal plants for the treatment of diverse ailments for thousands of years. According to the World Health Organization, most populations still rely on traditional medicines for their psychological and physical health requirements, since they cannot afford the products of Western pharmaceutical industries.

Rural areas of many developing countries still rely on traditional medicine for their primary health care needs and have found a place in day-to-day life. These medicines are relatively safer and cheaper than synthetic or modern medicine. People living in rural areas from their personal experience know that these traditional remedies are valuable source of natural products to maintain human health, but they may not understand the science behind these medicines, but knew that some medicinal plants are highly effective only when used at therapeutic doses.\(^3\)

1.2 Traditional Medicine

The term “Traditional Medicine” refers to protecting and restoring health that existed before the arrival of modern medicines. As the term implies, these approaches to health belong to the traditions of the each country and have been handed down from generation to generation. Traditional system in general has to meet the needs of local communities for many centuries. China, India, for example have developed very sophisticated system such as acupuncture and ayurvedic medicine. In practice, the term “Traditional Medicine” refers to following components: acupuncture, traditional birth attendants, mental healers and herbal medicine.

Over the years, the World Health Assembly has adopted a number of resolutions drawing attention to the fact that most of the populations in various
developing countries around the world depends on traditional medicine for primary health care that the work force represented by practitioner of traditional medicine is a potentially important resource for the delivery of health care and that medicinal plants are of great importance to the health of individual and communities.

Through its Traditional Medicine Programme, the World Health Organization (WHO) supports the Member States in their efforts to formulate national policies on traditional medicine, to study the potential usefulness of traditional medicine including evaluation of practices and examination of the safety and efficacy of remedies, to upgrade the knowledge of traditional and modern health practitioner, as well as to educate and inform the general public about proven traditional health practices.

A large proportion of the population in a number of developing countries still relies on traditional practitioners, including traditional birth attendants, herbalists and bone-setter and on local medicinal plant to satisfy their primary health care needs. WHO estimates traditional birth attendants assist in up to 95 % of all rural births and 70% of urban births in developing countries.

Traditional medicine has maintained its popularity in number of Asian countries such as China, India, Japan and Pakistan. Medicinal plants are the oldest known health-care products. Their importance is still growing depending on the ethnological, medical and historical research and drug development, not only when plant constituents are used directly as therapeutic agents, but also when they are used as basic materials for the synthesis of drugs or as models for pharmacologically active compounds.

1.3 Indian Medicine

The medical systems that are truly Indian in origin and development are the Ayurveda and the Siddha systems. Ayurveda is practiced throughout India, but the Siddha system is practiced in the Tamil-speaking areas of South India. These systems differ very little both in theory and practice. Ayurveda by definition implies the “Knowledge of Life” or the knowledge by which life may be prolonged. Its origin is
traced far back to the Vedic times, about 5000 BC. During this period, medical history was associated with mythological figures, sages and seers.

In ancient India, the celebrated authorities in Ayurveda medicine were Atreya, Charaka, Susruta and Vaghbhatt. Atreya (about 800 BC) is acknowledged as the first great Indian physician and teacher. He lived in the ancient university of Takshashila, about 2 miles west of modern Rawalpindi. The Indian snake root (rauwolfia) was employed for centuries by the Indian physician, before reserpine was extracted from the root and found spectacularly effective in the treatment of hypertension.

The early Indians set fractures, performed amputations, excised tumors, repaired hernias and excelled in cataract operations and plastic surgery. It is stated that British physicians learned the art of rhinoplasty from the Indian surgeons in the days of East India Company. During Buddhist times, Indian surgery suffered a setback because of the doctrine of ahimsa (non-violence).

1.4 Herbal Medicine

Herbal medicine sometimes refers to as Herbalism or Botanical Medicine, is the use of herbs for their therapeutics or medicinal use. An herb is a plant part valued for its medicinal, aromatic or savory qualities. Herbs contain a variety of chemical substances that has therapeutic value.

Herbal medicine is the oldest form of healthcare known to mankind. Herbs had been used by all cultures throughout history. It was an integral part of the development of modern civilization. Primitive man observed and appreciated the great diversity of plants available to him. The plant provided food, clothing, shelter and medicine. Much of the medicinal use of plants seems to have been developed through observations of wild animals and by trial and error. As time went on, each tribe added the medicinal power of herbs in their area to its knowledge base. They methodically collected information on herbs and developed well-defined herbal pharmacopoeia. Indeed, well into the 20th century much of the pharmacopoeia of scientific medicine was derived from the herbal lore of native peoples. Many drugs commonly used today are of herbal pharmacopoeias. Indeed, about 20% of
prescription drugs dispensed in United States contain at least one ingredient derived from plant material. Some are made from plant extracts; others are synthesized to mimic a natural compound.

The World Health Organization (WHO) estimates 4 billion people, 80 percent world population presently use herbal medicine for some aspect of primary health care. Herbal medicine is a major component in all indigenous people traditional medicine and a common element in Ayurvedic, Homeopathic, Naturopathic, Traditional oriented, and Native American Indian Medicine. WHO states that of 119 plant-derived pharmaceutical medicines, about 74 percent are used in modern medicine in ways that corrected with their traditional uses conducting extensive research on plant material gathered from the rain forests and places for their potential medicinal value.

Herbal medicine can be broadly classified into various basic systems: Traditional Chinese Herbalism, which is a part of traditional oriental medicine, Ayurvedic Herbalism, which is derived from Ayurveda, and Western Herbalism, which originally came from Greece and Rome to Europe and then spread to North and South America. (WHO, 1993)

### 1.5 Development of phyto medicines for various diseases

Medicinal plants play a key role in the human health care. About 80% of world populations rely on the use of Traditional Medicine, which is predominantly based on plant material. The traditional medicine refers to a broad range of ancient Natural Health Care practices including folk / tribal practices as well Ayurveda, Siddha, Amchi and Unani. These medical practices originated from time immemorial and developed gradually, to a large extent, by replying based on practical experiences without significant references to modern scientific principles. These practices incorporated ancient beliefs and were passed on from one generation to another by oral tradition and/or guarded literature, although herbal medicines are effective in the treatment of various ailments. Very often these drugs are unscientifically exploited and or improperly used. Therefore, these plants deserve detailed studies in the light of modern science.
It is estimated that about 7,500 plants are used in local Health Traditions, mostly, rural and tribal villages of India. Out of these, the real medicinal value of over 4,000 plants is either little known or hitherto unknown to the mainstream population. The classical system of medicines such as Ayurveda, Siddha, Unani and Tibetan use about 1,200 plants.\(^4\) A detailed investigation and documentation of plants used in local health traditions and pharmacological evaluation of these plants and their taxonomical relatives to the development of invaluable plant drugs for many dreadful diseases is to be carried out. Random screening of plants has not proved economically effective.\(^5\)

1.6 Phytotherapeutic Approach of Drug Development

In phytotherapeutic approach, the emphasis is on the development of a new drug whose extraction and fractionation have emanated on the basis of therapeutic activity. The standard fraction of an active extract or mixture of fractions may prove better therapeutically, less toxic and inexpensive compared to pure isolated compound drugs. However, crude plant preparation requires modern standards of safety and efficacy. Modern bioassay methods and phytochemical profile do provide ways and means of developing quality control as well as determining the expiry date of crude preparation or fraction. Standardized herbal preparations may serve as inexpensive and useful drugs to the masses.

Herbal drugs have gained importance in recent years because of their efficacy and cost effectiveness. These drug are invariably single plant extracts or fractions there of or fractions/extracts from different plants which have carefully standardized for their safety and efficacy.

Many herbal drugs are used in Indian systems of medicines as well as in folk medicines for the treatment of various ailments of the human beings and animals. The majority of the people living in India mostly rely heavily on the use of herbal drugs for the treatment of their ailments. Until the 19\(^{th}\) century, even the western medicine depended largely on crude drugs. During 20\(^{th}\) century, with progress in the chemical techniques, modern instrumentation and with the rapid growth of the pharmaceutical industries, crude drugs have been replaced gradually by synthetic chemical drugs.
Due to the increasing toxicity and allergic manifestation of the synthetic drugs and the necessary cost of production due to the involvement of complex technology for the research and the long time taken for the development, now the universe is looking for the remedies from the herbs only. In spite of the tremendous advancement made in the modern system of medicine, there are still a large number of conditions like, AIDS, Viral hepatitis etc., for which suitable drugs are not available in the modern systems of medicine.

1.7 Hepatoprotective activities of herbal drugs

Numerous plants and polyherbal formulations are used for the treatment of liver diseases. However, in most of the severe cases, the treatments are not satisfactory. Although experiment evaluations were carried out on a good number of these plants and formulations, the studies were mostly incomplete and insufficient. The therapeutic values were tested against a few chemicals-induced subclinical levels of liver damage in rodents. Even common dietary antioxidants can provide such protection from liver damage caused by oxidative mechanisms of toxic chemicals. However, experiments have clearly shown that plants such as Picrorrhiza kurroa, Andrographis paniculata, Eclipta alba, Silibum marianum, Phyllanthus maderaspatensis and Trichopus zeylanicus are sufficiently active against, at least, certain hepatotoxins. Screening plants for antihepatitis activities remains in its infancy. P.kurroa, E.alba, Glycyrrhiza glabra, A.paniculata and P.amarus are likely to be active against Hepatitis B virus. In the case of severe liver damage, most of the liver cells die or turn into fibrotic state and the treatment should include in addition to the therapeutic agents, agents which can stimulate liver cell proliferation. For developing satisfactory herbal combinations to treat severe liver diseases, plants have to be evaluated systematically for properties such as antiviral activity (Hepatitis B, Hepatitis C, etc), antihepatotoxicity (antioxidants and others), stimulation of liver regeneration and choleretic activity. The plants with remarkable activities for each of the above properties have to be identified. Single plant may not have all the desired activities. A combination of different herbal extracts / fractions is likely to provide desired activities to cure severe liver diseases. Development of such medicines with standards of safety and efficacy can revitalize treatment of liver disorders.6
Drugs improve the quality of life for millions of people and prevent disease on a global scale. Drugs have added 3-5 years to the average life expectancy and have revolutionized the treatment of many different diseases. Although there are expensive medicines against some infectious organisms, resistant strains are developing all the time; there is therefore, a continual need to develop even better drugs to treat infection.

Herbal preparations are preferred now-a-days due to,

1. Their easy availability
2. Their low cost
3. Their effectiveness and
4. Devoid of their serious toxic effects

Crude drugs in general are a complex mixture of a number of biologically active substances integrated under a certain rule to make crude drug function in the same way as a single therapeutic agent. Many active principles like antibiotics, alkaloids, glycosides, flavonoids, flavones, sterols, steroids, terpenes, etc. occur in the crude drugs. For the purpose of the use of the crude drugs, isolation of the active principles, determination of their structure and pharmacological investigations have to be carried out.

Research on plants should go on in the interest of humanity.