Introduction
1. INTRODUCTION

World Health Organization (WHO) distinguishes traditional medicine as health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral-based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses or to maintain wellbeing. If the material being used is of plant origin, then it is called traditional herbal medicine.

The first written records detailing the use of herbs in the treatment of illness are in the form of Mesopotamian clay tablet writings and Egyptian papyrus (Bensky and Gamble, 1993). Traditional medicine evolved over centuries, depending on local flora, culture and religion (Cassileth, 1998; Lans et al., 2001; Cragg and Newman, 2001). Indeed, well into the twentieth century, much of the pharmacopeia of scientific medicine was derived from the herbal lore of native people. This knowledge of plant based drugs developed gradually and was passed on, to constitute a source of raw materials for both traditional systems of medicine (e.g. Ayurvedic, Chinese, Unani, Homeopathy and Siddha) and modern medicine.

Nowadays, plant materials are employed throughout the industrialized and developing world as home remedies, over-the-counter drugs and ingredients for the pharmaceutical industry. As such, they represent a substantial proportion of the global drug market. Most rural populations, especially in the developing world, depend on medicinal herbs as their main source of primary health care.

Led by instinct, taste, and experience, primitive men and women treated illness by using plants, animal part and minerals that were not part of their usual diet. Herbal medicine is the oldest form of health care known to humanity and has been used in all cultures throughout history. Primitive people learned by trial and error to distinguish useful plants with beneficial effects from those that were toxic or non-active and also which combinations or processing methods had to be used to gain consistent and optimal results.
Herbal remedies consist of portions of plants or unpurified plant extracts containing several constituents, which often work together synergistically. The herbal drug preparation in its entirety is regarded as the active substance and the constituents are either of known therapeutic activity or are chemically defined substances or group of substances generally accepted to contribute substantially to the therapeutic activity of the drug.

Although most medicinal herbs are not, in their natural state, fit for administration, preparations suitable for administration are made according to pharmacopeia directions. The therapeutic potential of herbal drugs depends on its form: whether parts of a plant or simple extracts or isolated active constituents.

Phytochemical screening involves botanical identification, extraction with suitable solvents, purification, and characterization of the active constituents of pharmaceutical importance. Qualitative chemical examination employing different analytical techniques is conducted to detect and isolate the active constituent(s). In general all medicines whether they are synthetic or of plant origin, should fulfil the basic requirements of being efficacious and safe. Ultimate proof of these can only be achieved by some form of clinical research.

A defined and constant composition of the drug is therefore one of the most important prerequisites for any kind of clinical experiment. Quality control for the efficacy and safety of herbal products is essential. The quality control of phytopharmaceuticals may be defined as the status of a drug, which is determined either by identity, purity, content and other chemical, physical or biological properties or by the manufacturing process. Compared with synthetic drugs, the criteria and the approach for herbal drugs are much more complex.

Phytopharmaceuticals are always mixtures of many constituents and are therefore very variable and difficult to characterize. The active principle(s) in phytopharmaceuticals are not always known. To prove the constant composition of herbal preparations, appropriate analytical methods have to be applied and different concepts have to be used in order to establish relevant criteria for uniformity.
The value of herbal products in this regard can be assessed from: (i) the rate of introduction of new chemical entities of wide structural diversity, including serving as templates for semi synthetic and total synthetic modification, (ii) the number of diseases treated or prevented by these substances and (iii) their frequency of use in the treatment of disease.

The approach to new drugs through natural products has proved to be the single most successful strategy for the discovery of new drugs, but in recent years its use has been deemphasized by many pharmaceutical companies in favour of approaches based on combinatorial chemistry and genomics, among others. Again with rapid industrialization of the planet and the loss of ethnic culture and customs, some of the information on ethnomedicine will no doubt disappear. An abundance of ethnomedical information on plant uses can be found in scientific literature but has not yet been compiled into a usable form (Rout et al., 2009). Collection of ethnomedical information especially in the developing countries remains primarily an academic endeavour of little interest to most industrial groups.

Further, the plant biodiversity in this region has been continuously changing over the last 50 years. The rapid growth of industrialisation and mining, indiscriminate exploitation of resources, ecological imbalance due to pollution, forest fire, depletion of soil due to poor agricultural practices, erosion of soil due to deforestation and poor water holding capacity of soil, etc. are the causes which have adversely affected the biodiversity of the region. Consequently, many plant species have become extinct from the area or are on the verge of extinction. Such loss of species is never healthy for the environment and the consequences are grave.

Ancient healers, developed formulations based on medicinal herbs, were probably not aware about the chemical composition of the herbs. Medicinal herb is considered to be a chemical factory as it contains multitude of chemical compounds like alkaloids, glycosides, saponins, resins, oleoresins, sequiterpene, lactones and oils (essential and fixed). But the advancement they made despite the non-availability of scientific procedures is astonishing.
Nature is mankind’s greatest chemist and many compounds that remain undiscovered in plants are beyond the imagination of scientific community. Each plant is a chemical factory capable of synthesizing unlimited number of highly complex and unusual chemical substances. Over the past two decades, there has been a tremendous increase in the use of herbal medicine. This renewed interest is due to several factors, including the realization that nature has already selected for biological activity, that many botanical compounds have yet to be discovered, and that relatively few known compounds have been adequately characterized biologically. Furthermore, modern analytical instrumentation and improved micro bioassays have made discovery of these compounds less time consuming and laborious. However, there is still a significant lack of research data in this field. At this outset the present research work attempts “Pharmacognostic, Phytochemical and Bioactivity Studies on Dichrostachys Cinerea (L) Wight and Arn.”

Objectives

- To establish the Pharmacognostic details of Dichrostachys Cinerea (L) Wight and Arn. for maintaining quality control of specimen during medicine manufacture.
- Phytochemical profiling of Dichrostachys Cinerea (L) Wight and Arn.
- Extraction, purification and structural studies of an alkaloid
- Bioactivity studies of the alkaloid from Dichrostachys Cinerea (L) Wight and Arn.