

## **INTRODUCTION**

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From the time immemorable plants of this planet have been in use as a medicine. Although, it has not been recorded in the literature but it is of a common observation that, the plants are used in medicine even by animals. For instance cats and dogs are known to eat grass, otherwise carnivorous just to set their gastrointestinal trouble all right. Monkeys are known to lick the latex of Pleumaraea acutifolia at the time of delivering the baby. Perhaps man started emulating the animals especially in the tribal population.

The use of plant as medicine has been in records of both in the Vedic scripts in India as well as in Egypt and Unan. Ayurveda owes its origin and nurture to Charaka and Sushruta. Similarly in the Greek literature Hippocrates (460 - 377 BC), name is well known even today in the medical profession before one starts practicing they have to take an oath defining the code of conduct. This oath is known as Hippocrates oath. Although these developments prior to the Christian era greatly save the human lives, they were not effective in, on diseases which are contagious and spread on epidemic scale. Therefore, the mortalities due to contagious diseases, prior to the discovery of antibiotic used to be very high.

With the discovery of penicillin in the second decade of the century many contagious diseases such as tuberculosis,

typhoid, plague, etc. could be effectively controlled. Thus, a new era began in the 20th century and slowly people started gaining confidence of coming out of the dreadful diseases such as Tuberculosis. The advent of antibiotic raised hope of survival, but the individuals convulsed with many side effects. For instance, prolonged streptomycin treatment given in the tuberculosis makes the patient prone for diabetics. Nonetheless some of the physiological disorders such as diabetics, blood pressure could not be controlled by medicines such as antibiotics or even other synthetic drug without any side effects. Therefore, people started looking for a permanent remedy without any side effects. Ayurvedic and Unani medicines by and large of plant origin are considered to have least side effects. Therefore, many multinational pharmaceutical companies which mainly manufacture allopathic drugs by synthetic means have started exploiting searching a solutions in the ancient Indian Ayurvedic literature. As it is known in Ayurvedic literature, the remedial properties of the plant are given but the active principles which cure the disease are not identified. Systematic approach to the identifications of active principles is only of recent origin. Many drugs such as colchicine from Colchicum autumnale and Gloriosa superba, used for gout, Ephedrin extracted from Ephedra, used in bronchites, etc. are of commonly known drugs of plant origin. Forskolin a diterpene has been of recent discovery<sup>9</sup> is extracted from the root tubers of Coleus forskohlii commonly called main-mul (in Marathi). This drug is known as a potent antihypertensive

one, yet to be marked in India. There is very little basic literature available on 'the size and dimension' of its occurrence in the natural population of Coleus forskohlii. It is with a view to making basic studies such as cytological, genetical and physiological, so as to place the plant on the proper direction of drug exploitation, the work has been taken.

It is well known that, there is wide genetic variability in drug yielding ability as well as quality of the drug in the plants. It is also known that nutrients profoundly influence the quantitative drug yielding ability of the plant. In the present investigation, therefore, systematic study of Coleus forskohlii in this direction has been carried out. This includes karyotypic analysis, NPK trial, foliar application of nutrients, such as  $Mg^{2+}$  and  $Mn^{2+}$ , the gamma irradiation effect and isolation of mutants from the clonal population. The forskolin content of the roots in these plants have been separated by TLC method and quantitative variation is correlated with the treatments.

The entire work is presented as a comprehensive. The dissertation is divided into material and methods, results and discussions. The work is summarized at the end. The conclusions are based on experimental findings. The literature screened are presented as bibliography at the end.