Abstract

One of the main objectives of pursuing research on medicinal plants is to identify the active principle(S). The documentation of information on the medicinal use of the plants is, of course, an additional dividend. Natural products have so far been isolated from all possible sources, viz. terrestrial plants (the most primitive sources), animals and microbes, fresh water and marine algae, fishes and mainly marine invertebrates. The plants, with which we are intimately associated in our everyday life, possess the major active constituents of many medicines, vitamins, hormones, flavours, antioxidants, etc. which are quite immensely needed by us.

By trial and error method, man has always acquired significant biological knowledge in determining the use of plants and also on how to avoid the poisonous and dangerous compounds present in the plants. It is considered that at present the majority of world’s inhabitants rely on traditional medicine for healthcare, which are primarily plant-based. Most of the currently used important drugs contain active ingredients from plants, practised in traditional medicine and many other drugs use natural products as synthons. This information demonstrates the importance of natural products in drug discovery. The beneficial effect of plants of whatever origin are usually due to the secondary metabolites present in it. The secondary metabolites comprise almost all classes of known organic compounds. Steroids, terpenoids, alkaloids, flavonoids, phenolics, coumarins, quinonoids, stilbenoids, lignans etc. are some of the important classes of bioactive secondary metabolites. The importance of natural products necessitates the preservation of their sources and additionally justifies the acquiring of all sorts of information including chemical informations on such sources. Since the terrestrial plants are by far the single largest sources of natural products including the bioactive ones, it is of utmost importance to gather chemical informations on such plants. It also becomes imperative to try to ascertain the biological activity, if there be any, of the isolated secondary metabolites.

Induced by this state of affairs, it was decided to undertake the systematic chemical investigation of one or two important plants, preferably endemic to Southern Assam and to screen the plant extracts or the pure secondary metabolites for certain types of bioactivities.
While surfing the literature in search of suitable terrestrial plants, we came across a recent report, (Khan et al., 2002), in which the authors expressed their concern that especially a tree fern, *Cyathea gigantea*, belonging to the family, Cyatheaceae, is on the verge of being extinct in or around Arunachal Pradesh. Motivated by this warning it was decided to select two plants, *Cyathea gigantea* and *Cyathea brunoniana*, both of which are endemic to the Karimganj District of Southern Assam, for their systematic chemical analysis and screening for biological activities. These studies and their outcome constitute the content of the present dissertation.

As a result of present studies, embodied in this dissertation, we have been able to isolate a few important secondary metabolites and ascertain the antimicrobial activity of certain fractions of the extracts.

To conclude, the selection of the plants was right, the experiments were carried out appropriately, the handling of the data was correct, and the overall information that retrieved via the present studies justified the undertaking of the present predoctoral research work.