

INDIGENOUS MEDICINAL PLANTS AND THE PHARMACEUTICAL INDUSTRY IN PAKISTAN

MUHAMMAD AMIN

Pharmacy Department, University of the Panjab, Lahore

Though it is needless to repeat here but, in view of the subject matter, it will not be out of the way to say in the words of Mr. Shellard that the pharmaceutical action of a crude drug is determined by the nature of its constituents. In many cases it has been possible to isolate the important constituents and determine their structure, and in some cases it has been possible for the organic chemist to synthesise them. Where it is a commercial proposition to synthesise these chemical substances or to isolate and purify them on a large scale, the active constituent is often used in preference to the drug itself or a preparation of the drug. This has certain advantages; for example medically it can guarantee a more exact dosage, pharmaceutically it can lead to a more suitable or elegant preparation free from undesirable constituents, and economically it usually ensures a regular supply at fairly uniform prices.

There are of course a number of examples where the therapeutic effects of the drug or galenical preparation of the drug differ to some extent from that of its active constituents in isolation. This may be due to synergistic effect of several constituents present in the drug or it may be due to a modifying effect by some constituents upon the physical properties of the others.

Sometimes, it may happen that all the active constituents of a drug were not known previously and the modern techniques of fractionation and separation have made it possible to isolate many more active constituents from the crude drug as has been demonstrated by the work of Prof. Stoll of Ciba on Gentian Roots. Further the constituents of certain drugs have not yet been satisfactorily elucidated, hence the drug itself or preparation thereof form the only method of administration.

Therefore, though being more and more replaced in modern practice by the end products of extraction—the pure principles themselves and in many cases by the same or related substances prepared synthetically, the 'intermediate' products of extraction as represented by extracts, tinctures, infusions etc. still play an important part in therapeutics and the medicinal plants remain a valuable asset to any country like Pakistan which has not yet established the chemical industries to produce the basic chemical products required for synthetic medicines.

Due to varied climates and reliefs, a host of important medicinal herbs and plants grow in Pakistan. The details of these plants can be found in the books by Chopra, Nadkarini and others and especially the booklet entitled "A Note on the Plants of Medicinal Value Found in Pakistan", published in 1956 by the Medicinal Plant Branch, Pakistan Forest Research Institute, Abbottabad now having its Headquarters at Peshawar in which about 1000 medicinal plants have been described. The Indigenous Drug Research Division, North Regional Laboratories, P.C.S.I.R., Peshawar has also made an important collection of medicinal plants found in the Frontier Regions.

The local Pharmaceutical Industry is more or less preparing nearly all the tinctures, extracts etc. included in B.P. or B.P.C. The details of the Statistics are given in the report entitled "Survey of Pharmaceutical Industry of Pakistan" published in 1959 by the Director-General of Health, Government of Pakistan, Karachi. As pure products, the preparation of santonin from *Artemisia* by the Curram Chemical Works, Rawalpindi and of Ephedrine from *Ephedra* by Marker Alkaloids, Quetta require special mention.

However to obtain good preparations of standard quality, the primary condition is to have irreproachable primary material.

The choice of the primary material and its conservation is therefore, of capital importance.

Unfortunately, in Pakistan, the pharmaceutical industry depends entirely upon the medicinal herbs and plants of wild growth which are collected mostly by totally illiterate, unqualified inhabitants of the hills and mountains and the shepherds or the agents of businessmen doing the trade of medicinal plants and herbs, who can not correctly recognise the various varieties and even are liable to mix up various species of the same family. They put these plants in bags or any cloth they are carrying at the moment and contrary to the requirements of the recognised methods of preservation of vegetable Drugs by drying in free air or by utilisation of hot air in sunshine, shadow, shade or a hot air tunnel as the case may be, throw it in a corner of their muddy humid houses where the active constituents of the drugs may undergo

various types of deterioration and may be rendered nearly devoid of the active therapeutic constituents.

Sometimes they throw these drugs on the roofs of their huts and houses where they are left at the mercy of direct sunshine and rains.

Consequently these herbs and plants made available to the Pharmaceutical Industry are totally undependable.

There is another grave problem created by the dependence of the industry on the supply of these medicinal herbs and plants of wild growth entirely.

As long as the plants are not in great demand, they may be available but if the demand is increased, the supply may fall short or may take long time till the quantity required is gathered from here and there.

In some cases like that of belladonna and hyoscyamus, the drugs are becoming extinct with the result that the tincture belladonna is now being prepared from concentrated extract imported from abroad by spending so much of the valuable foreign exchange.

On the contrary, the culture of medicinal plants constitutes a veritable pharmaceutical progress because of the centralisation of the collection in the hands of some experienced persons permitted to exercise a more direct action to ameliorate the conditions of culture, collection and dessication and ensure regular supply.

It is therefore, very important that the Government of Pakistan sets up a committee of local experts and the experts from UNESCO which, after visiting the various regions of Pakistan, may suggest the places and regions most suitable for the respective medicinal plants and the economical units of the area which should be brought under culture of medicinal plants to ensure the production in sufficient quantities to meet the requirements of the Industry.

The overall control of these areas in West Pakistan may be given to the Forest Department under the guidance of the Forest Research Institute, Peshawar and a parallel Institute in East Pakistan or a separate Directorate may be created under the Forest Department which would engage experts to look after the cultivation of the medicinal plants in these areas and their preservation.

UNESCO can help a lot by sending experts and equipment for this gigantic work and provide the necessary funds etc.

The Institute may carry out the work of standardisation of drugs in collaboration with the C.S.I.R. and the universities which would besides the standardisation, do research work to establish the chemical constitution and pharmacological properties of their active constituents. On the other part, we can not conceive of good factory of pharmaceutical products without the products control laboratories attached to the factory where the medicinal herbs and plants should be identified thoroughly and assayed for their quality before being used for the preparation of galenicals.