

MEDICINAL PLANTS IDENTIFICATION & CULTIVATION FOR QUALITY MANUFACTURING OF HOMOEOPATHIC DRUGS

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ABSTRACT

A large number of drugs in the Homoeopathic system of medicine are derived from plants. Many drugs are plants used as such or their derivatives by way of active principles. Usage of plants calls for strict adherence to pharmacopoeial standards and proper identification of plants for maximum pharmaceutical efficacy. Departure from such guidelines can result in palpable mistakes and consequent degradation in quality and therapeutic efficacy as well as loss of reputation for the manufacturer. Problems and pitfalls to be avoided are highlighted in this paper.

Introduction

Preparation of Homoeopathic medicines, especially those derived from plants should follow the guidelines and premises, following provings by stalwarts of yesteryears (Elias 1989; Julian, 1984). When original provings are studied, adherence, as close as possible to plant material from places cultivated, seasons in which to be harvested and the mode of preparations of mother tinctures or any other allied pharmaceutical products, would ensure, not only the production of high quality medicines as such, but would also vastly improve their therapeutic efficacy (Mandal & Mandal, 1994; Reddy 1995). When considering the usage of plants in preparing Homoeopathic medicines, relaxation of certain guidelines of preparations, ignoring of specific criteria for selection of plants (like the season of collection), as well as improvisation by substitutions and many other *de novo* practices have been adapted. The all round impact of such variables is yet to be assessed fully. A palpable outcome of these departures from well-trodden standard procedures would be the lowering of drug action or curative value, which would ultimately have a telling effect on the reputation of the system or the prescribing physician. Some of the lacunae in the preparation of drugs derived from plants useful in Homoeopathy are highlighted in this review. Methodologies are being evolved to detect these either at the level of the pharmacognostic stage, or the stage of prepared mother tincture or lastly at the

therapeutic stage. It is a fact that many of the dictums and rules are observed more in the breach. Rectifying these by personnel well trained in phyto-taxonomy and quality control would be the satisfactory aim as part of good manufacturing practices as applicable to Homoeopathic drugs (Muzumdar, 1991).

1. Drugs prepared from fresh materials

Plants containing a large amount of juice are included in this category (*Organon of Medicine* 5th edition). In the Homoeopathic system a unique problem is encountered in that many of the plants of this category grow only in Europe. If we are to become self sufficient by cultivating these plants in India, it can be only at the higher altitudinal areas, where similar climatological conditions can be reduplicated. A corollary to the above rule is that mother tinctures will have to be prepared *in situ*. At present, from the Homoeopathic drug manufacturers present in India, how many follow this dictum is a moot question. In the absence of cultivating of these plants in India, we are forced to import these medicines, from abroad at prohibitive costs and as to the genuineness and quality of such imported medicines we are not in a position to control any of these factors.

The plants useful in each category are listed with reference to their parts used.

CLASS - I (plants with maximum amount of juice)

Whole plant

Achillea millefolium, *Aconitum napellus*, *Anagallis arvensis*, *Bellis perennis*, *Capsella bursa-pastoris*, *Conium maculatum*, *Cynodon dactylon*, *Matricaria chamomilla*, *Petroselinum sativum*, *Solanum nigrum*, *Taraxacum officinale*, *Verbascum thapsus*.

Flowers

Calendula officinalis, Musa paradisiaca

Leaves

Aegle marmelos, Calendula officinalis, Cephalaria indica, Digitalis purpurea, Sambucus nigra

Root

Arum maculatum, Cicuta virosa, Rumex crispus

CLASS II (with medium amount of juice)

Plants used in this category include those, which are used fresh immediately after harvesting, or in other cases, allowed to dry.

Whole plant with/without roots

Capsella bursa-pastoris, Euphrasia officinalis, Thymus serpyllum, Vinca minor, Viola tricolor

Leaves

Nerium indicum, Rhus toxicodendron, Thuja occidentalis, Viscum album

Roots (Specified as fresh)

Symphytum officinale

Buds/Flowers

Humulus lupulus, Prunus spinosa

As opposed to the above, certain drugs utilizing parts of plant such as bark are mandatory allowed to dry and then the mother tinctures are prepared from them. These include:

Bark

Alstonia scholaris, Azadirachta indica, Cinchona officinalis, Cinnamomum verum, Saraca asoca, Terminalia arjuna, Calotropis gigantea, Cephaelis ipecacuanha, Centella asiatica.

Roots

Valerina officinalis

2. Nomenclature Changes

Homoeopathic system of medicine is unique in using only one plant (mono-herbal preparations), for a number of

formulations with Latin binomial nomenclature, as the standard drug name itself. We can appreciate this better because the founder, Dr. Christian Samuel Hahnemann, was a contemporary of many of the founding fathers of botanical nomenclature, such as Carolus Linnaeus. Many of the writers of the Materia Medica were also great naturalists and scientists who followed the scientific advancement of their period and incorporated the botanical names at the time validly and effectively published. However, due to advancement of knowledge in the botanical field of taxonomy, the concepts and protologues making up the understanding many of these medicinal plants and their products also changed necessitating name changes. So far two papers on nomenclature changes have been published.

A few examples are given below:

| Valid Name | Homoeopathic Name |
|---------------------------------------|--------------------------------------------|
| <i>Aphanamixis polystachya</i> | <i>Amoora rohituka</i> |
| <i>Cannabis sativa</i> | <i>Cannabis indica</i> |
| <i>Capsella bursa-pastoris</i> | <i>Thlaspi bursa-pastoris</i> |
| <i>Centella asiatica</i> | <i>Hydrocotyle asiatica</i> |
| <i>Glycosmis pentaphylla</i> | <i>Atista indica</i> |
| <i>Mallotus philippensis</i> | <i>Rottlera tinctoria</i> |
| <i>Petroselinum crispum</i> | <i>Apium petroselinum</i> |
| | <i>Petroselinum sativum</i> |
| | <i>Carum petroselinum</i> |
| <i>Saracen asoca</i> | <i>Janosia asoca(sic). (Jonesia asoca)</i> |
| <i>Senecio bicolor ssp. cineraria</i> | <i>Cineraria maritima</i> |
| <i>Silybum marianum</i> | <i>Carduus marianus</i> |

3. Substitutes

Substitutes of plant drugs in Homoeopathy are usually allied species, or those which are substituted by indigenous species versus exotics. They are listed separately. It is to be stressed, a comprehensive proving as to the therapeutic efficacy of many of these plants is yet to be worked out.

| S.No. | Plant Used | Substitute |
|-------|-------------------------------|----------------------------|
| 1 | <i>Aesculus hippocastanum</i> | <i>Aesculus indicum</i> |
| 2 | <i>Ailanthus altissima</i> | <i>Ailanthus exselsa</i> |
| 3 | <i>Argemone mexicana</i> | <i>Argemone ochroleuca</i> |

| S.No. | Plant Used | Substitute |
|-------|-----------------------------------------------|--------------------------------------------------------------------------|
| 4 | <i>Artemisia vulgaris</i> | <i>Artemisia nilagirica</i> |
| 5 | <i>Berberis vulgaris</i> | <i>Berberis tinctoria</i> |
| 6 | <i>Calendula officinalis</i> | <i>Tagetes erecta</i> & <i>T.patula</i> |
| 7 | <i>Calotropis gigantea</i> | <i>Calotropis procera</i> |
| 8 | <i>Cinchona officinalis</i> | <i>Cinchona succirubra</i> |
| 9 | <i>Cinnomomum verum</i> | <i>Cinnamomum wightii</i> |
| 10 | <i>Cissampelos pareira</i> | <i>Cissampelos pereira</i> var. <i>hirsuta</i> <i>Stephania japonica</i> |
| 11 | <i>Citrus aurantium</i> var. <i>bigaradia</i> | <i>Citrus aurantium</i> var. <i>aurantium</i> |
| 12 | <i>Citrus limonum</i> | <i>Citrus aurantifolia</i> |
| 13 | <i>Cyclamen europaeum</i> | <i>Cyclamen neapolitanum</i> |
| 14 | <i>Ephedra gerardiana</i> | <i>Ephedra foliolata</i> |
| 15 | <i>Equisetum arvense</i> | <i>Equisetum debile</i> |
| 16 | <i>Eucalyptus globulus</i> | <i>Eucalyptus</i> other species |
| 17 | <i>Exogonium purga</i> | <i>Mirabilis jalapa</i> |
| 18 | <i>Foeniculum vulgare</i> | <i>Anethum graveolens</i> |
| 19 | <i>Gaultheria procumbens</i> | <i>Gaultheria fragrantissima</i> |
| 20 | <i>Gymnema sylvestre</i> | <i>Gymnema hirsute</i> |
| 21 | <i>Indigofera tinctoria</i> | <i>Indigofera colutea</i> and other species |
| 22 | <i>Ixora coccinia</i> | <i>Ixora nigricans</i> |
| 23 | <i>Jasminum officinalis</i> | <i>Jasminum grandiflorum</i> |
| 24 | <i>Lobelia inflata</i> | <i>Lobelia erinus</i> |
| 25 | <i>Luffa acutangula</i> var. <i>amara</i> | <i>Luffa acutangula</i> |
| 26 | <i>Michelia champaca</i> | <i>Michelia nilagirica</i> |
| 27 | <i>Mucuna pruriens</i> | <i>Mucuna hirsute</i> |
| 28 | <i>Ocimum basilicum</i> | <i>Ocimum</i> other species |
| 29 | <i>Oenothera biennis</i> | <i>Oenothera</i> other species |
| 30 | <i>Plantago major</i> | <i>Plantago erosa</i> |
| 31 | <i>Rauvolfia serpentina</i> | <i>Rauvolfia tetraphylla</i> |
| 32 | <i>Rosa damascena</i> | <i>Rosa</i> other species |
| 33 | <i>Ruta graveolens</i> | <i>Ruta chalapensis</i> |
| 34 | <i>Saraca asoca</i> | <i>Polyalthia longifolia</i> |
| 35 | <i>Solidago virgaurea</i> | <i>Solidago canadensis</i> |
| 36 | <i>Taraxacum officinale</i> | <i>Taraxacum javanicum</i> |
| 37 | <i>Thuja occidentalis</i> | <i>Thuja orientalis</i> |
| 38 | <i>Valeriana officinalis</i> | <i>Valeriana jatamansi</i> & <i>V. wallichii</i> |
| 39 | <i>Vinca minor</i> | <i>Vinca major</i> |
| 40 | <i>Vitex trifolia</i> | <i>Vitex negundo</i> |

4. Obscure plants

A few plants, though effectively proved by Homoeopaths have been left without complete names or description, some of these are cited below.

1. *Atista indica*

The name does not seem to appear in standard botanical literature. Nevertheless, there is a consensus of opinion that the plant is *Glycosmis pentaphylla* (Retz.) DC (Family: Rutaceae).

2. *Menispermum*

The plant whose generic name alone is mentioned by Boericke (1988), is *Menispermum canadensis*, which is an American plant and does not occur in India.

3. *Luffa bindal*

Ghose (1981) gives the name of this plant drug, which works out to *Luffa echinata* Roxb. (Suresh Baburaj, 1997).

4. *Kamala*

Whereas a number of plants in indigenous literature of India seem to have this name, the Homoeopathic medicinal plant, as gleaned from Clarke (1982) is *Mallotus philippensis* (Lam.) Muell-Arg. (Euphorbiaceae) being the glandular red powdery excrescences on the surface of fruits (given as *Rottlera tinctoria* Roxb.). One more plant is also listed as being used viz., *Croton coccineus* Wall. (= *Mallotus atrovirens* Muell.-Arg.)

5. *Kino australiense*

This name occurs in Boericke (1988) but is clarified in Allen (1982) as *Eucalyptus rostrata* Schl., which again is now changed nomenclaturally as *Eucalyptus camaldulensis* Dehnh. The Indian Kino is *Pterocarpus marsupium* Linn.

6. *Chamomille*

Both, the Roman Chamomille (*Anthemis nobilis* L.) and the German Chamomille (*Matricaria chamomile* L.) are useful in Homoeopathy. Hence while prescribing care should be taken to distinguish them.

7. *Brugmansia*

Two plants, superficially resembling each other are listed under this name (Clarke, 1982; Allen 1982). However, they are botanically different entities.

- i) *Brugmansia suaveolens* (Willd.) Bercht. & Presl
- ii) *Datura arborea* Linn. (= *Brugmansia candida* Pers.)

8. *Cocculus indicus*

This trade name is applicable to the plant *Anamirta cocculus* L. (Menispermaceae).

Conclusion

The importance of proper identification and selection of correct parts of plants in appropriate seasons, adhering to prescribed procedures, be it preparation of mother tinctures or any other pharmaceutical preparations, would ensure quality medicines with maximum therapeutic efficiency. Stability in botanical nomenclature would ensure research workers and other technical personnel in their search for research literature as well as to ensure whether the proper plant is utilized in each drug. Obscure and ambiguous names with regard to certain plant drugs have also been clarified and set right for proper usage in future.

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