E2-19: Quality control of the ayurvedic drug Dasamoolarishtaya. Identity tests based on thin layer chromatography

A M Abeysekera[1], T M S G Tennakoon[1], K T D de Silva[2]
([1]Univ. of Sri Jayewardenepura, [2]UNIDO, Vienna, Austria)

Dasamoolarishtaya (DMA) is a very popular ayurvedic drug, prepared from over 60 plant ingredients. There are many brands available in the market and some form of quality control is necessary. The integrity of such a complex preparation cannot be established by routine methods such as soluble

4. *Glycyrrhiza glabra* and *Pterocarpus marsupium*/dimethyl ether/toluene : ether (1:1, saturated with 10% acetic acid)/ natural products reagent/0.59/iso liquiritigenin.

5. *Cinnamomum zeylanicum* and *Eugenia caryophyllus*/ hexane/toluene:ether (93:7) /0.65/eugenol.

6. *Elettaria cardamomum* and *Myristica fragrans* /toluene ethylacetate (93:7) /phosphomolybdic acid/0.36 and 0.54/not determined.

7. *Pterocarpus marsupium, Glycyrrhiza glabra* and *Acacia chundra*/dimethyl ether/toluene:ether (1:1 saturated with 10% acetic acid) /natural products reagent and polyethylene glycol/0.2/not determined.

8. *Cinnamomum zeylanicum, Mesua ferrea, Piper longum* and *Saussurea lappa* /hexane/toluene:ethylacetate (7:3) /anisaldehyde sulphuric/0.15/not determined.

9. *Terminalia chebula, Terminalia belerica, Phyllanthus emblica* and *vitis vinifera* /chloroform/toluene:ethylformate: methanol:formic acid (5:4:4:05) /0.45/not determined.

It is possible to develop a TLC system to analyse complex ayurvedic drugs such as Dasamoolarishtaya. These systems also provide chromatographic profiles which can be used to fingerprint the drug. The profiles can also be quantitated to develop standards for the drug.

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extractive values etc. used for simple phytopharmaceuticals. Qualitative and quantitative chromatographic profiling is required. Towards this end, TLC methods for the identification of individual plants and groups of plants in DMA were developed.

Given the complexity of the drug DMA, meaningful TLC is possible only after fractionation to groups of compounds based on physico-chemical properties. DMA was extracted by the following solvents: hexane, methylene chloride, chloroform, dimethyl ether and ethylacetate. These extracts were subjected to extensive chromatography on silica, using a variety of solvents and a variety of spray reagents. The prominent spots on the TLC were correlated with specific plants/groups of plants based on a study of their chemistry, and comparison with the corresponding TLC of arishta preparations having formulae related to DMA. The correlations were confirmed by comparing the corresponding TLC of the plants with those of the aqueous extracts of the DMA ingredients with and without the plant/group of plants under consideration. The compounds used for the correlation were isolated by preparative chromatography and their structures determined by spectroscopy.

The following plants and groups of plants can be identified in DMA. In the listing given below, the data is arranged as follows. Plant(s)/extraction solvent/developing solvent/visualisation/rf/identity of compound (where known)

1. *Plumbago indica* / chloroform / toluene:ether (1:1,saturated with 10% acetic acid/uv and anisaldehyde sulphuric/0.65/mixture of isoshinanolone and epi-isoshinanolone.

2. *Saussurea lappa* /hexane/hexane:ether (9:1)/anisaldehyde sulphuric/0.41/mixture of dehydrocostus lactone and dihydro dehydrocostus lactone.

3. *Aegle marmelos* and *Feronia limonia* / ethyl acetate/tolnera :ethylacetate (9:7) / uv /0.55/umbelliferone.