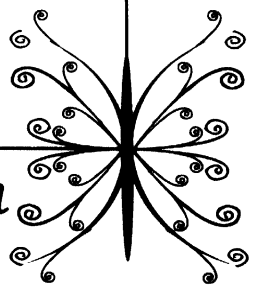


Summary and Conclusion



VI. SUMMARY AND CONCLUSION

The dissertation is entitled 'Standardization Studies and Scientific Validation on Market Samples of a Traditional Indian Drug' namely Agar (Hindi) or Akil (Tamil).

The study claims importance in the context of some confusion and controversies relating to the authenticity and botanical diagnosis of original Agar and its adulterants / substitutes.

Due to severe scarcity and extreme endemism of the Agar or *Aquilaria malaccensis* Lam. (= *A. agallocha* Roxb.) Family: Thymelaeaceae, the traders have assorted to many trade wood samples which simulate the original Agar, to supply to the consumers.

A perusal of literature revealed that little fragmentary information on various perspectives of Agar did not help to resolve scientific validation of the drugs available in the market.

The present study aims at indepth analysis of pharmacognostic, phytochemical and pharmacological standardization parameters of the original Akil as well as the various market samples in the name of Akil.

Under pharmacognostic studies, microscopic structures of the original Akilwood were studied. Eight other market wood samples namely, S II – S IX .

The original Agarwood exhibits highly specific microscopic features such as *interxylary* or *included phloem* in the wood, absence of *growth rings*, *diffused vessel* distribution, thin walled angular *clustered or solitary vessels*, short *uniseriate / biseriate heterocellular* xylem rays and *libriform* type of thin walled fibres.

Other eight samples of the market do not share the above-mentioned anatomical features of Akil; these woods vary quite distinctly from the agarwood.

The histochemical studies were carried out for the presence of alkaloid, starch, protein, oil, tannin localised in the sample tissues. The samples were subjected to loss on drying at 105°C, pH, ash value, extractive value, solubility value, volatile oil content, qualitative phytochemical screening and inorganic chemical analysis as the standards showing the physico - chemical properties of the source samples.

The results varied for all samples. Volatile oil in *A. malaccensis* was found in good yield, which attributes the drug as in S VII to possess its aromatic property for which the drug is highly valued.

Phytochemical profiles showed similar type of compounds especially tannins, polyphenols, carbohydrates and proteins. These plant metabolites were found in good yield in S VI and *A. malaccensis*. TLC profiles for all the samples showed marked differences in pattern under UV 264 and 366 nm. HPTLC finger printings showed differences in all samples, which would be very useful in identifying the genuine drug chemically and other sources scientifically. An alkaloid liriodenine, a marker compound was isolated from *A. malaccensis* with m.p. 274 - 5° and was estimated. It would be useful in substantiating for the identification of genuine drug chemically.

Pharmacologically *A. malaccensis* and S VI were found to have potent anti - cancer and broncho - dilatory activity whereas other sources were less potent compared to these sources and all the samples were found to be devoid of toxicity up to 2 g per kg dose level.

For global acceptance of traditional drugs, standardisation and scientific validation as narrated on the present dissertation is the need of the hour, thus in the present study proper identity of the drug AKIL is established unequivocally with the help of botanical, chemical and pharmacological parameters as *A. malaccensis*. Observation and subsequent discussions of the pharmacognostic, phytochemical and pharmacological parameters of Agarwood and its eight adulterants have revealed to conclude that most of the woods (or almost all woods) in the markets are mostly adulterants. Since original Agarwood is extremely rare, some substitutes having parallel pharmacological potentials as the Agar can be suggested.

S VI ; S VII and S VIII

seem to possess some of the essential properties of Agarwood; these three woods may be considered for recommendation as substitute after further scientific studies for agarwood, whereas other woods do not seem to possess any features for substitutes or alternative sources of Agar.