

# Study of Identification of Substitutes of Medicinal Plant Raw Materials in Jaffna

Viviyan Sathiyaseelan and T. Sathiyaseelan

**Abstract---** Medicinal plants are today utilized in both the developing and the developed countries. In the developing countries herbal medicines, from the back bone of the traditional therapeutic armory. Indigenous medicine, medicinal plant raw materials are used in preparation of drug. To prepare standard drugs, the raw materials should be of high quality.

The researches have identified 15 outlets which trades raw materials in Jaffna, with the permission of Government Agent. In the 15 outlets almost 200-250 type of raw materials are used in trade. Among that type of raw material 5 medicinal plant raw materials used in preparation of important medicine are found to have substitutes. If we used the substitutes instead of genuine species, there will be a less efficacious therapeutics effect. The genuine species should be brought in to the Srilankan market by the following step taken,

- Authentication of medicinal plant raw materials by taxonomist.
- Cultivating genuine species of raw materials by farmers in suitable land in Srilanka.
- Established the standard raw materials museum and genuine seeds banks in Siddha Ayurvedic pharmaceuticals.
- Medicinal plant raw material outlets should be modernized by pharmacognosy laboratory.

**Keywords---** Raw Materials, Jaffna, Substitutes

## I. INTRODUCTION

**M**EDICINAL plants are the main raw material of Indigenous medicine which provide a rational means to treat a number of diseases which are considered obstinate and incurable in other systems of medicine. Herbal products are complex mixtures of hundreds of compounds. The quality and efficacy of herbal products will depend on the use of authentic plant materials. Medicine should be safe, efficacious and of good quality. Quality has to be built into the final product starting from the raw materials to the finished product. Substitution occurs where an entirely different article is sold or used in place of one required. Medicinal plants play an important role in preparation of indigenous medicine. To prepare standard medicine we need genuine and quality raw material. The identification of genuine species of medicinal plant should be maintained. According to the international symposium held at Bandaranaike Memorial Ayurvedic Research Institute in 1995 about 500 species of medicinal plants are used daily in Indigenous Medicine around Srilanka most of the raw materials used in Srilanka are imported from foreign countries such as India & China. Since the imported raw material, are costly there can be a possibility of substitution of the raw materials. To overcome this difficulty we should encourage the cultivation of the identified genuine species of plants in the suitable place of our country thus we can obtain genuine species of raw material, the prepared herbal medicine will be of higher therapeutic value.

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## II. SIGNIFICATION OF THE STUDY

The significance of the topic is reflected by the fact that the Ayurveda, Siddha and Unani systems of medicine and traditional medicine is based on use of extracts from plants. Srilanka is extremely rich in medicinal plants and in their bio-diversity.

## III. GENERAL OBJECTIVE

1. To identify the substitute of medicinal plant raw materials in Jaffna.

## IV. SPECIFIC OBJECTIVE

1. TO find out the number of medicinal plants raw material outlets in Jaffna district.
2. To identify the total number of raw materials sold in Jaffna outlets.
3. To identify the substitute of medicinal plant of raw materials sold in Jaffna outlets.
4. To find out the different between the genuine & substitutes of raw material.

## V. METHODOLOGY

The permission for the above research was obtained from the Government Agent of Jaffna district by the researchers. The research was carried out from 2010 August – 2011August. 15outlets of raw materials were identified in Jaffna district by the researchers. The researchers visited to the entire sale centers & they identified & recorded the total number of raw materials. The researchers identified the raw materials of medicinal plants with the same name as the genuine species the above identified raw materials are used as substitutes in medicinal preparations. Around 200 – 250 raw materials were sold in 15 outlets. Out of those sold raw materials 6 species of important raw material which are commonly used in indigenous medicinal preparation were substitute with low quality raw materials in the 15 outlets. This was identified by the researches. The identified substitute's species were named same as the genuine spices in the 15 outlets. The list of the substitutes identified in the 15 outlets.

## VI. CHALLENGES FACED IN GETTING GENUINE SPECIES

1. Genuine species are imported from other countries and also costly.
2. The lack of authentication skill required for the identification of genuine species of plants.
3. The employees in the sale centers are not well educated in the identification skill.
4. Genuine seeds bank is not still established in Jaffna.
5. These medicinal plants raw material is only available in traditional outlets.
6. Standard raw material of medicinal plants museum is not established in Jaffna, due to that we are unable to compare the substitute species with the genuine species.

## VII. THE SOLUTION REQUIRED TO OVERCOME THE ABOVE CHALLENGES

1. Introducing the cultivation methods to produce large scale of genuine species to the farmers in our country.
2. All the raw materials in the outlets should be authenticated by the taxonomist.
3. Organizing awareness programmers about the identification of genuine species of medicinal plants to educate the employees.
4. Establish a genuine seeds bank in Jaffna.
5. It is advisable to establish a standard raw materiel medicinal plants museum.

6. It is advisable to join with a pharmacognosy laboratory for the authentication of genuine species

The Tables Show, the Differences between the Genuine and Substitutes of Medicinal Plant Raw Materials

Table 1

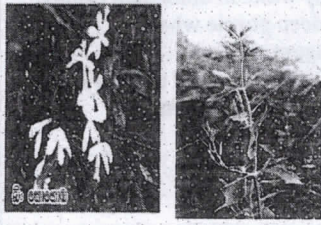
	<i>Munroniapumila Wight</i>	<i>Peristrophecalyculata</i>
Tamil name	Nilavembu	Kattunilavembu
Family name	Meliaceae	Acanthaceae
Species	Genuine	Substitute
Description	 <p>very small hardy shrub; long woody roots; leaves are pinnate, petioles 1 to 4.5 cm long; flowers are regular, bi-sexual, white; fruit a depressed globose 5-lobed capsule, 1.2 cm diam., and hairy, seeds pyriform, narrowly winged, smooth, brown. Flowers during July, August and April.</p>	An erect, hispid herb or undershrub 60-180 cm high stem quadrangular about 3/2 ft in length pointed and smooth, dark in colour, leaves opposite, ovate on long petioles, flowers remote alternate rose coloured or white streaked with purple; capsules pointed narrowed in to a cylindric stalks, seeds orbicular, papillose, slightly rugose.
Part used	Whole plant	Whole plant
Chemical composition	Cheratin	Ophetic acid, Cheratin, Essential oil.
Pharmacological Action	Anti-pyretic, Anti-periodic, Diuretic.	Febrifuge, Tonic, stomachic

Table 2

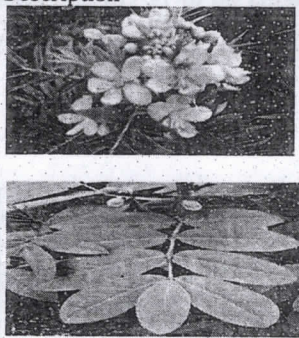
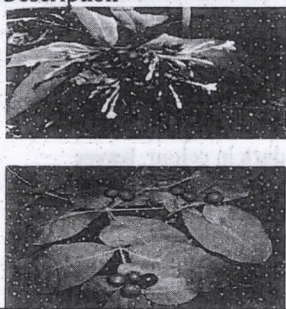
	<i>Cassia senna Linn</i>	<i>Cassia obovata</i>
Tamil name	Nattunillavarai	Kattunillavarai
Family name	Leguminosae	Leguminosae
Species	Genuine	Substitute
Description	 <p>A small shrub with stems Leaves; Pinnate, Alternate, spreading Flowers; irregular, bisexual, bright yellow Fruit pod oblong, 5cm or more long Seed about 8, obovate, wedge shaped</p>	Semi shrubby, perennial some time an annual, Angular branches, Leaves; alternate, spreading, linear-lanceolate, 2-2.5, cm long, 1-1.3cm broad, Flowers; irregular, bisexual, bright yellow, Petals 5, fruit pod 3.7 cm long, 1.5 cm broad, Seeds; about 10, obovate, wedge shaped
Part used	Leaves, Pods	Leaves
Chemical composition	Sennasoid A,B,C,D Sennasoid C,D are the minor constituents Anthroquinone	Sennasoid A,B
Pharmacological Action	Laxative, purgative, Anthelmentic	Purgative, Anthelmentic
		It is called dog senna or Italian senna the leaves are broadly ovate and abruptly tapering towards apex. Histologically the lower epidermis of the leaves represents papillose cells.

Table 3

	<i>Rauvolfiaserpentina</i> Linn	<i>Rauvolfiatetraphylla</i>
Tamil name	Nattupampukkalla	Kattupampukkalla
Family name	Apocynaceae	Apocynaceae
Species	Genuine	Substitute
Description	 <p>A herbesious perennial with long, Vertical, yellowish, Nodular rootstock, simple woody stems, 30-60 cm high, Leaves in whorls of 3. 7-13.5cm long, 2.3-5cm broad, lanceolate, tapering to both ends, Flowers irregular, march- may and November, Fruit about 7mm long, broadly ovoid</p>	<p>A small much branched woody shrub 0.6-1.2 high. Leaves whorled, elliptic, flowers; greenish white or creamy white in umbellate cymes, drupes ovoid, deep purple when ripe;pyrenesrugose, oblong. It is found as a common weed in the vicinity of port towns along the cost line.</p>
Part used	Root, Leaves	Root
Chemical composition	Ajmalicine, Ajmaline, Ajmalinine, Alkaloids A,C &F, Reserpiline, Reserpine, Reserpinine, Serpine, Serpinine, serpentine	Ajamalicine, Ajmaline
Pharmacological Action	Antihypertensive, sedative ,hypnotic, febrifuge	Antihypertensive, sedative ,hypnotic, febrifuge

Note:- the plant is somewhat similar in habit to *Rauvolfia serpentina* and is more hardy than the later.

The root of *Rauvolfiatetraphylla* occurs in straight, cylindrical curved or conical segments up to 12 cm in length and 0.4-2.5 cm in diameter. Externally is grayish brown to dark brown or reddish brown. The order is indistinct and the taste very bitter.

Table 4

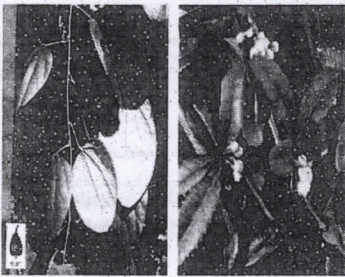
	<i>Cosciniumfenestraumcolebr</i>	<i>Berberisaristata</i> Dc
Tamil name	Mara manjal	Dadukarithira or Mudkadambu
Family name	Menispermaceae	Berberidaceae
Species	Genuine	Substitute
Description	 <p>A large, woody climbing shrub, leaves round, ovate, or broadly cordate, long petioled, flowers unisexual, male and female flowers on separate plants. Seeds albuminous, cotyledons lacinate.</p>	<p>Is an erect glabrous spinescent shrub, 3-6m in height leaves with obovate to elliptic toothed leaves, yellow flowers</p>
Part used	Wood	Wood, Root & Bark
Chemical composition	Berberine, Berberrubine - increase amount jatrorrhizine, Palmatine and thalifendine	Berberine, Berberinechloride, Palmatinechloride
Character of wood	Wood is lighter and softer than <i>Berberisaristata</i>	
Pharmacological Action	Antibacterial, Antifungal, Diuretic	Emmernagoue, Laxative, Antiscourbutic

Table 5

	<i>Biophytumsensitivum Dc</i>	<i>Mimosa pudica Linn</i>
Tamil name	<i>Thottalvadi</i>	<i>Thottalshurungee</i>
Family name	Oxalidaceae	Leguminosae
Species	Genuine	Substitute
Description	A variable annual, 2.5-25cm in height commonly found in the hotter parts of India and Srilanka. Leaves sensitive, 3.8-12.7cm long. Flower, yellow, seeds minute with obliquely transverse tubercled ridges.	A diffuse herb 45-90cm high with sparingly prickly stems and branches, Leaves bipinnate sensitive, 2.5-5cm long, bristly linear lanceolate. Flower regular, bisexual, pink. usually flowers in September and October. 3-5 one seeded joints which fall away from the persistent sutures which are clothed with spreading yellowish weak bristles.
Part used	Leaves, Whole plant	Root, Leaves
Chemical composition	The mature leaves contain an insulinlike principle.	Plant-mimosine, root-Tannin
Pharmacological Action	Diuretic, Astringent, Antiseptic, Antimicrobial activity.	Diuretic, Astringent, Antispasmodic, seeds & root-Emetic.

### VIII. DISCUSSIONS AND CONCLUSION

The medicinal plants raw materials and genuine seeds bank are yet not established in Jaffna.

Therefore the above said museum and seeds banks should be established under the Siddha Ayurvedic pharmaceuticals. In the museum the genuine samples of raw materials should be exhibited. The raw materials should be compared with the samples in the museum, before selling in the outlets. Identified genuine species should be cultivated in mega scale by farmers in and around Jaffna.

Out of five identified genuine species, *Rauwolfia serpentina Linn* and *Cassia senna Linn* are cultivated and exported in India, its given foreign exchange in large scale. Jaffna District consist the same climatic and soil texture in like the south India specially Tamilnadu. These two raw materials not only used in Siddha Ayurvedic medicine but also used in allopathic medicine. Rest of three identified genuine species could be cultivated in Jaffna district also. Fifteen outlets are available as in only in traditional outlets, these should be modernized by pharmacognosy laboratory. By identifying the substitute in the outlets and by preventing their usage, we can encourage the usage of genuine species of raw materials. This will result in the increase of quality of medicine prepared from those raw materials and give efficacious therapeutic value. Above mentioned five genuine species are mainly used in fever, skin disorders, constipation, diabetes, hypertension and prevent tetanus. By introducing a new act of law against the usage of substitute raw materials in the outlets; we can eradicate the usage of substitute raw material.

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