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REVIEW ARTICLE

THE THERAPEUTIC POTENTIAL OF TEN SACRED PLANTS (DASHAPUSHPA) OF KERALA STATE OF SOUTHERN INDIA

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Abstract:

Kerala state is famous for its medicinal plant wealth and the tradition of indigenous system of therapy, specifically the Ayurveda. Dashapushpam constitute a group of ten potential herbs which are culturally and medicinally significant to the people of Kerala state. They are a group of ten herbs with which the ladies decorate their hairs and dance the thiruvathira kali on the day of thiruvathira in the Malayalam month of dhanu (December to January). Dashapushpas are also been eaten in the form of karkkadaka kanji in karkkidaka masam (during mid-July to mid August) to get better health in the upcoming monsoon season. Also these plants are used in folklore practice in lithiasis, gonorrhoea, vomiting, indigestion, skin diseases, intermittent fever, flatulence, urogenital diseases etc. Most of them are scientifically validated for various bioactivities. Still there are lots of possibilities for potential pharmacological activities from these herbs, yet to be explored. This article would throw light on the therapeutic potential of these ten sacred plants aiding to further propagation of these plants.

Keywords: therapeutic potential, dashapushpam, karkkadaka kanji, sacred plants

Introduction:

The Western Ghats region, wherein the Kerala state is situated, is one of the 34 biodiversity hotspots in the whole world.⁸⁷ A fairly good collection of plants over 200 taxa used in Ayurveda include dashapushpam, ten sacred plants of Kerala tradition and culture.⁸⁸ The state contains more than 4,500 species of flowering plants of which above 1,500 taxa are endemic in nature.⁸⁹ Kerala state is famous for its medicinal plant wealth and the tradition of indigenous system of therapy, specifically the Ayurveda. Herbs play a significant role in pharmaceutical industries as natural sources of life saving drugs.¹ Healthcare sectors around the world, more frequently than ever are facing the problems of combating the entry of novel, mutant pathogenic strains of microorganisms and their resistance against synthetic drugs. This calls for the discovery of new compounds with diverse chemical structures and novel mechanisms of action. Natural products either as

pure compounds or as standardized plant extracts are the right solutions because of their unmatched display of chemical diversity.

Dashapushpas have been consumed in the form of karkkadaka kanji in karkkidaka masam (during mid-July to mid August) to prevent the aggravation of vata dosha in upcoming varsha ritu (monsoon season). These plants have been used in folklore practice for wide variety of conditions such as lithiasis, gonorrhoea, vomiting, indigestion, skin diseases, intermittent fever, flatulence, urogenital diseases etc. Most of them are scientifically validated for various bioactivities. But a comprehensive exploratory studies needs to be carried out for evaluating the pharmacological activities of these herbs.

Review of Ten Sacred Plants (Dashapushpa): Dashapushpam literally means 'ten flowers' ('dasham' refers to ten and 'pushpam' refers to 'flowers'). In the present context, the word "dashapushpam" refers to 'ten species of plants'.

Table 1: List of dashapushpa drugs

Sl.	Sanskrit name	Latin name	English name	Family name	Parts used
1	bhadra	<i>Aerva lanata</i> (L.) AL Juss. ex Schultes	Indian water lily	Amaranthaceae	whole plant
2	viparitha lajjalu	<i>Biophytum sensitivum</i> (L) DC	sensitive wood-sorrel.	Oxalidaceae	whole plant
3	indravalli	<i>Cardiospermum halicacabum</i> Linn.	balloon vine	Menispermaceae	shoots, leaves
4	musali	<i>Curculigo orchioides</i> Gaetrn.	black musali	Amaryllidaceae	tuber
5	murva	<i>Cynodon dactylon</i> (Linn.) Pers.	Bermuda grass	Poaceae	leaves
6	bhringaraja	<i>Eclipta alba</i> Hassk.	-	Asteraceae	shoots, leaves
7	akhukarni	<i>Emilia sonchifolia</i> (L.) DC.	Canada Flea-bane	Convolvulaceae	shoots, leaves
8	harikrantha	<i>Evolvulus alsinoides</i> Linn.	slender dwarf morning glory	Convolvulaceae	whole plant
9	lakshmana	<i>Ipomoea sepiaria</i> koen. Ex Roxb.	ipomea	Convolvulaceae	whole plant
10	sahadevi	<i>Vernonia cinerea</i> (Linn.) Less.	ash coloured Flea-bane	Asteraceae	whole plant

Table 2: Dashapushpa and their Hindu deity

No.	Sanskrit name	Deity in Hindu religion
1	<i>bhadra</i>	yama dev
2	<i>viparitha lajjalu</i>	shree parvathy
3	<i>Indravalli</i>	lord indra
4	<i>Musali</i>	bhumi devi
5	<i>Murva</i>	Sun
6	<i>bhringaraja</i>	lord shiva
7	<i>Akhukarni</i>	Kamadeva
8	<i>harikrantha</i>	lord Vishnu
9	<i>lakshmana</i>	shree bhagavathy
10	<i>Sahadevi</i>	Brahma

Dashapushpas are culturally and medically significant to the people of Kerala. All are used as ingredients in various ayurvedic formulations. They are considered auspicious in Kerala and each herb is associated with a deity in hindu mythology.

The dashapushpa drugs has been referred in classical ayurvedic texts such as arogya kalpadruma, sarvaroga chikitsaratna, abhidana manjari, kodasheri margam, prayoga samuchayam, chikitsa kauthukam, vaidya manorama and agastyamarmashastra. As per the

tradition of Kerala, the women wears dashapushpam garland on the head for it was considered sacred plants. In front of the household shrine, the ten sacred plants of dashapushpam were displayed in a gleaming brass plate in the Malayalam month of karkkidakam (the monsoon season in Kerala state) in the olden days. It was also prescribed by the rajavaidya (doctors for the king) to the ladies to wear these plants on their head; probably due to the medicinal value imparted by them.

Several studies were undertaken on different members of dashapushpam. In this endeavor, author would throw some light to further popularize these sacred plants as these plants are essential as better remedy for various ailments. Coming to the detailing of these ten plants.

1. *Aerva lanata* (L.) A. L. Juss. ex Schultes⁵

Aerva lanata (L.) A. L. Juss. ex Schultes belongs to family Amaranthaceae, locally known as 'bui'.⁷⁰

Habit and distribution⁷⁰

This is an erect, prostrate undershrub and occurs throughout India as a common weed in fields and waste places. Herb, erect or prostrate with a long tap-root, branched from near the base;

branches many, pubescent or woolly- tomentose, striate. Plant occurs in tropical regions of India ascending to 6000 feet altitude. In addition to Kerala state, the plant is also found in Uttar Pradesh, Andhra Pradesh, Gujarat, Rajasthan, Tamil Nadu and Madhya Pradesh.

Chemical constituents⁷⁰

Plant contains biological active canthin-6-one alkaloids such as 10-methoxy-canthin-6-one, 10-hydroxy-canthin-6-one, 10-O-β-D-glucopyranosyloxycanthin-6-one, 10-hydroxycanthin-6-one (ervine), 10-methoxycanthin-6-one (methylervine), 10-β-D-glucopyranosyloxycanthin-6-one (ervoside), aervine (10-hydroxycanthin-6-one), methylaervine (10-methoxycanthin-6-one) and aervoside (10-β-D-glucopyranosyloxycanthin-6-one). *Aerva lanata* is a rich source of flavanoids such as kaempferol, quercetin, isorhamnetin, isorhamnetin 3-O-β-[4-p-coumaroyl-α-rhamnosyl(1→6) galactoside and flavanone glucoside persinol, persinosides A and B, 5, 4'-hydroxy-3, 6, 7-trimethoxyflavone, 5-hydroxy-3, 6, 7, 4-tetramethoxyflavone, 5-hydroxy 2', 3,5', 6, 7-pentamethoxyl flavone, 3,3',5,7-trihydroxy-4'-methoxyflavone, apigenin 7-O-β-D-glucoside and 7-O-β-D-glucopyranoside.^[21]

Pharmacodynamics⁷¹

Rasa: tikta (bitter), kashaya (astringent)

Guna: laghu (light), teekshna (Penetrating)

Virya: usna (hot)

Vipaka:katu (pungent)

Doshakarma: kaphavata shamana (pacifying kapha and vata dosha)

Therapeutic uses⁷⁰

The plant is diuretic, used in lithiasis. The root is useful in strangury (slow to be and painful discharge of urine). The roots are used in the treatment of headache. The plant is regarded as a demulcent on the Malabar Coast. It is valued for cough in Ceylon; also as a vermifuge for children. The Meena tribals of the Sawaimadhopur district of Rajasthan give orally the juice of the roots to patients of liver congestion, jaundice, biliousness and dyspepsia. They also give decoction of the whole plant to

cure pneumonia, typhoid and other prolonged fevers. It also has anthelmintic action. The roots of plants are used in the treatment of headache. It is also used as demulcent and useful in strangury. It is used in traditional medicine as antidiarrhoeal, diuretic, and in lithiasis. It is valued in arsenic poisoning. The herb is also used in malaria and skin diseases.

Pharmacological studies

The plant is reported as antimicrobial,³ antiparasitic,⁴ diuretic and antiurolithiasis,⁵⁻⁶ acute renal failure,⁷ antiasthmatic,⁸ antifertility activity,⁹ antihyperglycemic and anti-diabetic,¹⁰⁻¹¹ hypolipidemic,¹² hepatoprotective,¹³ immunomodulatory and antitumor,¹⁴⁻¹⁵ and anti-diarrheal activity.¹⁶

2. *Biophytum sensitivum* (L.) DC^[24]

This herb is known as 'viparitha lajjalu' in Sanskrit, belonging to Oxalidaceae family.^[72]

Habit and distribution⁷²

It is a very small flowering plant, an annual herb of erect stem, stout or slender, and glabrous.¹⁷This plant flower is an important flower for the people of Kerala state. The flower is used in Athapoo (special floral formation that adores courtyards and public places) during Onam festival, the festival of Kerala state. It is distributed throughout the hotter parts of India as weeds in moist shady places and all over tropical Africa and Asia to the Philippines.

Chemical constituents⁷²

The main constituent present is insulin. The other constituents are two biflavones; cupressuflavone and amentoflavone, three flavonoids, luteolin -7-methyl ether, isoorientin and 3-methoxyluteolin 7-O-glucoside as well as two acids, 4-caffeoylquinic acid were isolated from the aerial parts of *Biophytum sensitivum*.

Pharmacodynamics⁷²

Rasa: tikta (bitter), kashaya (astringent)

Guna: laghu (light), ruksha (dry)

Virya: sheeta (cold)

Vipaka:katu (pungent)

Doshakarma: kaphapitta shamana (pacifying kapha and pitta dosha)

Therapeutic uses⁷³

In Ayurveda, this is a tonic, stimulant and in the treatment of stomach ache, diabetes and asthma. It is also used in insomnia, convulsions, cramps, chest-complaints, inflammations and tumours. Decoction is given in bronchial asthma and phthisis. Roots decoction is given in lithiasis. The leaves are diuretic and relieve strangury. The seeds are powdered and applied to wounds. The root in decoction is given in gonorrhoea and lithiasis. The crushed whole plant is used in chronic skin troubles. It is eaten to induce sterility in man.¹⁸The effect of the leaf extract for the treatment of hyperglycaemic patients was studied on glucose homeostasis in rabbits. The anti-inflammatory activity of aqueous and methanol extracts of aerial parts and roots were studied in the carrageenin-induced rat paw oedema model. All the extracts except the methanol extracts of aerial parts exhibited anti-inflammatory activity.

Pharmacological studies

The plant is reported as antioxidant,¹⁹ anti-inflammatory,²⁰ antidiabetic,²¹ anti angiogenic activity,²² anti cancer,²³ chemo protective,²⁴ immunomodulatory,²⁵ radio-protective and wound healing property.

3. *Cardiospermum halicacabum* Linn.⁷⁴

The common names of this plant are Balloon vine and a member of Sapindaceae family.

Habit and distribution⁷⁴

Climbing, annual (sometimes perennial) herbs, up to 3 metres long. Stem and branches furrowed. Plant is commonly climbing on bushes and hedges along road-sides, forest-clearings and in dry deciduous forests, also common in cultivated fields. Greatly found throughout the plains of Southern India.

Pharmacodynamics⁷⁵

Rasa: tikta (bitter)

Guna: laghu (light), ruksha (dry)

Virya: ushna (hot)

Vipaka: katu (pungent)

Doshakarma: vatakapha shamana (pacifying vata and kapha dosha)

Therapeutic uses⁷⁴

The root is considered diaphoretic, diuretic, and aperient. The fried leaves are considered emmenagogue. The leaves and stem are used against common cold and angina. The leaf paste is applied on domestic animals to kill lice and other insects. It is used in the treatment of rheumatism, lumbago, skeletal fractures, nervous diseases, amenorrhoea, haemorrhoids, and erysipelas, emetic, laxative, rubefacient and stomachic. The herb is used in hair oils for treating dandruff, alopecia and for darkening hair. *C. halicacabum* has been used in the treatment of rheumatism, nervous diseases, stiffness of the limbs and snakebite. Leaves are crushed and made into a tea, which aids itchy skin. Salted leaves are used as a poultice on swellings. Young leaves can be cooked as vegetables. The leaf juice has been used as a treatment for earache as well.²⁶

Pharmacological studies⁸⁶

The plant extracts showed marked insecticidal effects as ovicide and larvicide for *Musca domestica* Linn. and as larvicide for *Philosamia ricini* (Boisd.) Alcoholic extract of the plant showed antisickling and antiarthritic activity. In the pharmacological validation of this plant, the toxicological evaluation of *C. halicacabum* revealed that the drug is safe and is not toxic upto 40 g/kg in rats. The plant extract showed significant analgesic and anti-inflammatory activity and sedative effect on CNS. The drug also showed (transient) vasodepressant activity. Seeds have positive anabolic activity and increase body weight by inducing a positive nitrogen balance. The alkaloid fraction from the seeds showed hypotensive activities and cardiac inhibition in anaesthetized dogs; blocked spasmogenic effects of acetylcholine, histamine on guinea pig ileum, biphasic action on frog rectus abdominus muscle. The seeds also showed antibacterial activity.

4. *Curculigo orchioides* Gaetrn.²⁸

This plant is known as 'kali musali' in Sanskrit belonging to family Amaryllidaceae.⁷⁶

Habit and distribution⁷⁶

A sub-erect excessively branching and tall with densely crowded whitish cladophylls chub with stout, terete stem and ascending branchlets. It occurs in the subtropical Himalayas from Kumaon eastwards ascending to 1800 meters, the Hhasia hills, Bengal, Assam, Konkan, the Western Peninsula and Chennai extending South as far as Cape Comorin. In many parts of India, due to its over exploitation, kali musali is becoming rare in occurrence.

Chemical constituents²⁸

A new orcinol glucoside, orcinol-1- beta D-apiofuranosyl beta-D glucopyranoside was isolated. Orcinol glucoside, curculigoside, curculigoside B &C, Syringic acid, 2, 6 dimethoxyl benzoic acid. The rhizome contains saponins (curculigosaponin C and F) sapogenins; phenolic glycosides, a triterpene alcohol; a pentacyclic triterpene, an aliphatic compound, hentriacontanol, sitosterol, stigmasterol, cycloartenol and sucrose. A peptide, Curculin C, containing amino acids, has been isolated from the fruit.

Pharmacodynamics⁷⁷

Rasa: madhura (sweet)

Guna: guru (heavy), snigdha (unctuous)

Virya: sheetha (cold)

Vipaka:madhura (sweet)

Doshakarma: vatapitta shamana (pacifying vata and pitta dosha) and kapha vardhaka (increasing kapha dosha)

Therapeutic uses²⁷

It is present in several drug formulations used in the treatment of menorrhagia and other gynaecological problems. The root is bitter, appetizer, nervine, adaptogenic, sedative, anticonvulsive, androgenic and anti-inflammatory. It is also used in jaundice, urinary disorders and skin diseases, useful in piles, fatigue, diseases of the blood. The rhizome is used for asthma, diarrhoea, and gonorrhoea, demulcent and diuretic, tonifying kidney and for strengthening muscles and bones. According to Ayurveda, root is heating, aphrodisiac, appetizer, useful in the treatment of piles, fatigue, blood related disorders. According to

Unani system of medicine, root is carminative, tonic, aphrodisiac, antipyretic and useful in bronchitis, ophthalmic, indigestion, vomiting. The powdered rhizomes with milk are taken as a restorative tonic, also for sexual debility.

Pharmacological studies

Curculigosaponin C and F promoted proliferation of spleen lymphocytes very significantly; F and G increased the weight of the thymus *in vitro* in mice. Alcoholic extract of the plant exhibited hypoglycaemic property. The plant is reported to possess antioxidant,²⁷ antihypoglycaemic,²⁸ immunostimulant,²⁹ hepatoprotective,³⁰ aphrodisiac³¹ and estrogenic activities.³²

5. *Cynodon dactylon* (Linn.) Pers.⁷⁸

Cynodon dactylon (Linn.) Pers. belongs to family Poaceae. This herb is known as 'Durva' in Sanskrit language which can grow in poor soil. Bermuda grass or dhub grass was considered as a sacred grass by the Hindus, and it is still used for worships in temples.⁷⁸

Habit and distribution⁷⁸

A large twining herb; extremities soft-tomentose; bark grey, corky and deeply furrowed on old stems. It grows throughout the Southern part of India. It grows in open areas where there are frequent disturbances such as grazing, flooding, and fire.

Chemical constituents⁷⁸

Bermuda grass is reported to contain cynodin, hydrocyanic acid, and triticin. Phenolic phytotoxins - ferulic, syringic, *p*-coumaric, vanillic, *p*-hydroxybenzoic and *O*-hydroxyphenyl acetic acids, are reported from the plant. The leaves contain flavone C glycosides and a flavonoid sulphate.

Pharmacodynamics⁷⁹

Rasa: tikta (bitter), kashaya (astringent)

Guna: guru (heavy), ruksha (dry)

Virya: usna (hot)

Vipaka:usna (hot)

Doshakarma: tridoshshara (pacifying tridosha)

Therapeutic uses³³

The parts used medicinally are the stems and the leaves. The Ayurvedic Pharmacopoeia of India describes the dried fibrous root in menorrhagia, metrorrhagia and burning micturation. It is also reported to be antiseptic, demulcent, diuretic, and emollient. The grass is a remedy in epistaxis, haematuria, inflamed tumours, whitlows, fleshy excrescences, cuts, cystitis, nephritis and in scabies and other skin diseases. Herb is possessing astringent, anticatarrhal, styptic properties. A decoction of the root is used to stop bleeding from piles. Internally it is used in the treatment of chronic diarrhoea and dysentery. The leaf juice has also been used in the treatment of hysteria, epilepsy and insanity. The plant is a folk remedy for headache, haemorrhage, hypertension, measles, snake bite, uro-genital disorders, warts and wounds.

Pharmacological studies

The over ground parts of *Cynodon dactylon* (Linn.) Pers. evaluated for in vitro antioxidant activity by DPPH free radical scavenging activity, Nitric oxide radical scavenging activity.³⁴

6. *Eclipta Alba* Hassk.⁹⁰

It is commonly known as 'false daisy' belonging to family Asteraceae.^[46]

Habit and distribution⁴⁵

It is an erect or prostrate, much branched, roughly hairy, annual, rooting at the nodes. The stem and branches trigonous with appressed hairs on both sides and tapering base. It is found as a common weed throughout Southern India ascending up to 6000 ft.

Chemical constituents

Main active principles consist of coumestans like wedelolactone, desmethylwedelolactone,⁶² furanocoumarins, oleanane & taraxastane glycosides.⁴⁶ *Eclipta alba* (L.) contains wide range of active principles which includes coumestans, alkaloids, flavonoids, glycosides, polyacetylenes, triterpenoids. The leaves contain stigmasterol, a-terthienylmethanol, wedelolactone, demethylwedelolactone and demethyl-

wedelolactone-7-glucoside. The roots give hentriacontanol and heptacosanol.⁴⁵ The roots contain polyacetylene substituted thiophenes. The aerial part is reported to contain a phytosterol, P-amyrin in the n-hexane extract and luteolin-7-glucoside, P-glucoside of phytosterol, a glucoside of a triterpenic acid and wedelolactone in polar solvent extract.⁴⁵ The polypeptides isolated from the plant yield cystine, glutamic acid, phenyl alanine, tyrosine and methionine on hydrolysis. Nicotine and nicotinic acid are reported to occur in this plant.^[45]

Pharmacodynamics⁸⁰

Rasa: tikta (bitter), katu (pungent)

Guna: laghu (light), ruksha (dry)

Virya: usna (hot)

Vipaka: katu (pungent)

Doshakarma: kaphavata shamana (pacifying kapha and vata dosha)

Therapeutic uses

It is used as a tonic and diuretic in hepatic and spleen enlargement. It is also used in catarrhal jaundice and for skin diseases. The alcoholic extract of the plant has shown antiviral activity against Ranikhet disease virus.⁴³ The plant is commonly used in hair oil all over India for healthy black and long hair.^[41] The fresh juice of leaves is used for increasing appetite, improving digestion^[42] and as a mild bowel regulator. It is commonly used in viral hepatitis to promote bile flow and protect the parenchyma and popularly used to enhance memory and learning. The plant has a reputation as an anti ageing agent in Ayurveda.^[44] It is used as a general tonic for debility. Externally it is used for inflammation, minor cuts and burns and the fresh leaf-juice is considered very effective in stopping bleeding.^[7]

Pharmacological studies

The water extract of the whole plant exhibited the most potent inhibitory activity against HIV-1 integrase (HIV-1 IN).⁴⁷ The plant is reported as anti-hepatotoxic, anti-hyperlipidemic,³⁵ antioxidant,³⁵ immunomodulatory,³⁹ analgesic and anti-inflammatory,

³⁷⁻³⁸antidiabetic, ⁴⁰hair growth and alopecia⁴¹ and anticancer activities.³⁶

7. *Emilia Sonchifolia* (L.) DC.⁴⁸

This plant is commonly known as 'red Pualele,'/'cupid's shaving brush' belonging to Convolvulaceae family.⁴⁸

Habit and distribution⁵⁰

A glabrous slender herb, 30-40 cm in height. Erect, variously branched. Leaves obovate and flowers purplish in colour. Distributed throughout India, Ceylon, most tropical and sub tropical regions. The whole plant is used medicinally.

Chemical constituents⁴⁸

The aerial part of the plant has been reported to contain alkaloids, flavonoids, and terpenes. The aerial parts contain pyrrolizidine alkaloids, senkirkine and doronine. Presence of simiaryl, β -sitosterol, palmitic and triacontannic acids is also reported in the plant.

Pharmacodynamics⁸¹

Rasa: tikta (bitter), kashaya (astringent), katu (pungent)

Guna: laghu (light), teekshna (penetrating)

Virya: sheeta (cold)

Vipaka:katu (pungent)

Doshakarma: kaphapitta shamana (pacifying kapha and pitta dosha)

Therapeutic uses⁵⁰

The plant is sudorific, antiseptic, astringent, depurative, diaphoretic, diuretic, expectorant, febrifuge, and ophthalmic. A tea made from the leaves is used in the treatment of dysentery. The juice of the leaves is used in treating eye inflammations, night blindness, cuts and wounds and sore ears. It is used in infantile tympanitis and bowel complaints. Root used as anti-diarrhoeal. Leaf used for otitis media under medical supervision.

Pharmacological studies

The plant is reported as anti-inflammatory,⁴⁹ antioxidant,⁵⁰ anti-bacterial,⁵¹ cytotoxic activity,⁵² anti-cataract⁵³ and anti diabetic activities.⁵⁴

8. *Evolvulus alsinoides* Linn.⁵⁵

In Sanskrit language, this plant is known as 'vishnu's step' and is used in worship belongs to Convolvulaceae family.

Habit and distribution⁵⁵

This is a perennial prostrate herb widely distributed in tropical and subtropical regions throughout the world. It grows as a weed in open and grassy places throughout India. It is with a small woody root stock.

Chemical constituents

The plant contains alkaloids: betaine, shankha-pushpina and evolvine. Fresh plant contains volatile oil. It also contains a yellow neutral fat, an organic acid and saline substances. An unidentified compound has been isolated.^[55] 2,3,4-trihydroxy-3-methylbutyl 3-[3-hydroxy-4-(2,3,4-trihydroxy-2-methylbutoxy)-phenyl]-2-propenoate (1) and 1,3-di-*O*-caffeoyl quinic acid methyl ester, caffeic acid, 6-methoxy-7-*O*- β -gluco-pyranoside coumarin, 2-C-methyl-erythritol, kaempferol-7-*O*- β -gluco-pyranoside, kaempferol-3-*O*- β -glucopyranoside and quecetine-3-*O*- β -glucopyranoside were reported from *n*-BuOH soluble fraction from the ethanol extract of *E. alsinoides*.⁵⁶

Pharmacodynamics⁸²

Rasa: tikta (bitter), katu (pungent)

Guna: laghu (light), ruksha (dry)

Virya: usna (hot)

Vipaka:katu (pungent)

Doshakarma: kaphavata shamana (pacifying kapha and vata dosha)

Therapeutic uses⁵⁶

The whole plant is used for various ailments. The plant is used as a remedy for dysentery and to enhance intelligence and improve memory. The plant is bitter, acrid, febrifuge, aphrodisiac, anthelmintic, expectorant and useful in bronchitis, brain tonic, an aid in conception, astringent, antidysenteric and asthma. It is also useful in epilepsy, forgetfulness, falling and greying of hair, intermittent fevers and general debility. Used in nervine affections (epilepsy, insanity,

spermatorrhoea), and duodenal ulcers, also for uterine affections, uterine bleeding and internal haemorrhages. A decoction of this herb is given as a blood purifier.

Pharmacological studies

It is reported to show powerful stimulant activity on respiration and blood pressure (possibly analeptic). Aqueous extract of the petal showed antifungal property. The plant is reported as anti bacterial,⁵⁷ anti helminthic,⁵⁸ anti stress,⁵⁹ anti amnesic,⁶⁰ anti ulcer and anti catatonic,⁶¹ anti oxidant,⁶² gastro protective and immunomodulatory activities.⁶³

9. *Ipomoea sepiaria koen. Ex Roxb.*⁶⁴

This plant known as 'lakshmana' in Sanskrit language belonging to convolvulaceae family.

Habit and distribution⁶⁴

A slender twinning perennial with villous stems and tuberous roots. It is distributed throughout greater part of India.

Chemical constituents

Ipomoea resin, the seeds contain non-ergoline type indole alkaloids, ipobscurine A & B, and a serotonin alkaloid Ipobscurines C.^[64]

Pharmacodynamics⁸³

Rasa: madhura (sweet)

Guna: guru (heavy), snigdha (unctuous)

Virya: sheetha (cold)

Vipaka: madhura (sweet)

Doshakarma: vatapitta shamana (pacifying vata and pitta dosha) and kapha vardhaka (increasing kapha dosha)

Therapeutic uses⁶⁴

Juice of the plant is used as deobstruent, diuretic, hypotensive, uterine tonic, antidote to arsenic poisoning. The plant is reported to show aphidicidal activity and appeared to be useful as pesticides. Seeds used as cardiac depressant, hypotensive, spasmolytic. Plant is also used in the treatment of sterility in women, urinary retention, constipation, gynaecological disorders.

10. *Vernonia cinerea (Linn.) Less.*⁸⁴

This plant is commonly called as 'ash-coloured fleabane' belonging to the family Asteraceae.⁸⁴

Habit and distribution⁸⁴

An erect, rarely decumbent, tender or soft herb, a weed; stems slender, 15-17cm., high (6 inch to 3 feet) grooved and ribbed; branches hairy. It is distributed throughout India, as a weed on roadsides and open places. It is one of the commonest Indian weeds.

Chemical constituents⁶⁵

The chief constituents are the triterpenes. Aerial parts gave luteolin-monobeta-D-glucopyranoside. Whole plant gave triterpene compounds- betaamyirin acetate, lupeol acetate, betaamyirin and lupeol; sterols- beta-sitosterol, stigmasterol and alpha-spinasterol; phenolic resin and potassium chloride. The useful parts include the flower (treatment of conjunctivitis), seeds (used as anthelmintic), root (dropsy), and juice (piles).

Pharmacodynamics⁸⁵

Rasa: tikta (bitter)

Guna: laghu (light), ruksha (dry)

Virya: ushna (hot)

Vipaka: katu (pungent)

Doshakarma: kaphavata shamana (pacifying kapha and vata dosha)

Therapeutic uses⁶⁵

The whole plant is also considered to promote perspiration in febrile condition. The roots are useful in diarrhoea, cough, inflammations, skin diseases, leprosy, renal and vesical calculi. The leaves are useful in humid herpes, eczema, ring worm, guineaworms, and elephantiasis. The flowers are used in conjunctivitis. The seeds are useful in roundworms, threadworms, cough, flatulence, leucoderma, psoriasis, chronic skin disease. The plant is used as anticancer, febrifuge, diaphoretic (infusion of herb, combined with quinine, is used against malaria). Used as a specific herb for leucorrhoea, dysuria, spasm of bladder, strangury and for haematological disorders, as a blood purifier and styptic, also used in asthma. Seeds used as antifatulent, antispasmodic; used

in dysuria, decoction used for colic. The Ayurvedic Pharmacopoeia of India recommends the plant in intermittent fever, filariasis,

Pharmacological studies

The water soluble fraction of the methanol extract of the defatted dried ground whole plant of *Vernonia cinerea* showed significant diuretic activity in rats comparable to lasix a known diuretic. The plant is reported as anti microbial,⁶⁵ anti oxidant,⁶⁶ immunomodulatory,⁶⁷ anti inflammatory, analgesic, anti pyretic⁶⁸ and cytotoxic activity.⁶⁹

Discussion:

The ten drugs referred to as dashapushpa drugs are both culturally and therapeutically significant especially to the people of Kerala state. Almost all the ten drugs except kali musali and lakshmana possess similar pharmacodynamics. These drugs are with bitter, kashaya (astringent) and katu (pungent), with light, sharp and dry properties and with ushna virya and katu Vipaka. Henceforth, these ten herbs are to be studied and understood like the other group of herbs such as dashamoola, panchamoola and other dashemani explained by acharya charaka. All these drugs are being used traditionally in several ailments as headache, stomach ache, diarrhea, amenorrhea, rheumatism, antipyretic etc. later on the studies conducted proved the folklore claims on the efficacy of these drugs. the drugs in the dashapushpa group have been extensively studied even for its anticancer effect. the pharmacological studies done on different dashapushpa drugs proved the antimicrobial, antiparasitic, antidiabetic, antidiarrheal, antioxidant, antiinflammatory, immunomodulatory, antibacterial, antihelminthic, anti-stress, anti-amnesic, antiulcer, anticatonic, analgesic, antipyretic, gastroprotective and cytotoxic activity like effects. Henceforth, more extensive research studies should be conducted in this direction.

Conclusion:

The therapeutic potential of these ten sacred plants are unlimited and not explored properly to cure various illness. Research and

pityriasis versicolour (tinea versicolor), blisters, boils, vaginal discharges and in cases of psychoneurosis.

development must be encouraged for developing new drug molecules from these plants. The detailed investigation of its standardization, pharmacological activity, toxicity and clinical trials may help to develop new drugs for controlling various diseases. The global scenario has shown a great increase in phytomedicine research. So, the drug development from these plants has tremendous scope in the future. Some of the research activities have been carried out on these plants during the past few decades which give sufficient motivation among the scientist community in exploring more information about these sacred plants. A research and development programme should be undertaken on dashapushpam for their potential in economic and therapeutic utilization. Also the cultivation, collection, and further pharmacological exploration of these ten plants are essential.

References:

1. Singh V, Pandey RP. Ethnobotany of Rajasthan. Jodhpur: Scientific Publishers: 1998.
2. Ahmed E, Imran M, Malik A, Ashraf M. Antioxidant activity with flavonoidal constituents' from *Aerva persica*. Arch Pharm Res 2006;29:343-7.
3. Chowdhury D, Sayeed A, Islam A, Shah Alam Bhuiyan M, Astaq Mohal Khan GR. Antimicrobial activity and cytotoxicity of *Aerva lanata*. Fitoterapia 2002;73:92-4.
4. Anantha D, Israiel Kumar T, Santosh Kumar M, Manohar Reddy A, Mukharjee NS, Lakshmana Rao A. *In vitro* anti helmentic activity of aqueous and alcoholic extracts of *Aerva lanata* seeds and leaves. J Pharm Sci Res. 2010;2: 317-21.
5. Vetrichelvan T, Jegadeesan M, Senthil Palaniappan M, Murali NP, Sasikumar K. Diuretic and antiinflammatory activities of *aerva lanata* in rats. Indian J Pharm Sci 2000;62:300-2.
6. Soundararajan P, Mahesh R, Ramesh T, Begum VH. Effect of *Aerva lanata* on calcium oxalate urolithiasis in rats. Indian J Exp Biol 2006;44:981-6.

7. Shirwaikar A, Issac D, Malini S. Effect of *Aerva lanata* on cisplatin and gentamicin models of acute renal failure. *J Ethnopharmacol* 2004;90:81-6.
8. Kumar D, Prasad DN, Parkash J, Bhatnagar SP. Antiasthmatic activity of ethanolic extract of *Aerva lanata* Linn. *Pharmacologyonline* 2009;2:1075-81.
9. Savadi R, Alagawadi K. Antifertility activity of ethanolic extracts of *plumbago indica* and *Aerva lanata* on albino rats. *Int J Green Pharm* 2009;3:230-3.
10. Deshmukh TA, Yadav BV, Badole SL, Bodhankar SL, Dhaneshwar SR. Antihyperglycaemic activity of alcoholic extract of *Aerva lanata* (L.) A.L. Juss. ex J.A. Schultes leaves in alloxan induced diabetic mice. *J Applied Biomed* 2008;6:81-7.
11. Vetrichelvan T, Jegadeesan M. Anti-diabetic activity of alcoholic extract of *Aerva lanata* (L.) Juss. ex Schultes in rats. *J Ethnopharmacol* 2002;80:103-7.
12. Soundararajan P, Mahesh R, Ramesh T, Begum VH. Hypolipidemic activity of *Aerva lanata* on ethylene glycol induced calcium oxalate urolithiasis in rats. *Pharmacologyonline* 2007;1: 557-63.
13. Nevin KG, Vijayammal PL. Effect of *Aerva lanata* against hepatotoxicity of carbon tetrachloride in rats. *Environ Toxicol Pharmacol* 2005;20:471-7.
14. Nevin KG, Vijayammal PL. Pharmacological and immunomodulatory effects of *Aerva lanata* in daltons lymphoma ascites-bearing mice. *Pharm Biol* 2005;43:640-6.
15. Nevin KG, Vijayammal PL. Effect of *Aerva lanata* on solid tumor induced by DLA cells in mice. *Fitoterapia* 2003;74:578-82.
16. Joanofarc J, Vamsadhara C. Evaluation of antidiarrhoeal activity of *Aerva* species. *Nat Prod Sci* 2003;9:177-9.
17. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.383.
18. Kamble SY, Patil SR, Sawant PS, Sangita S, Pawar SG, Singh EA. Studies on plants used in traditional medicine by Bhilla tribe of Maharashtra. *Indian Journal Of Traditional Knowledge* 2010; 9(3):591-598.
19. Guruvayoorappan C, Afira AH, Kuttan G. Antioxidant potential of *Biophytum sensitivum* extract *in vitro* and *in vivo*. *J Basic Clin Physiol Pharmacol* 2006;17:255-67.
20. Banerjee T, Van der Vliet A, Ziboh VA. Down regulation of COX-2 and iNOS by amentoflavone and quercetin in A549 human lung adenocarcinoma cell line. *Prostaglandins Leukot Essent Fatty Acids* 2002;66:485-92.
21. Puri D. Screening of mildly hypoglycaemic compounds: Obese British Angora rabbits with borderline glucose intolerance as animal model. *Indian J Pharm Sci* 2006;68:579-83.
22. Guruvayoorappan C, Kuttan G. Inhibition of tumour specific angiogenesis by amentoflavone. *Biochemistry (Mosc)* 2008;73:209-18.
23. Guruvayoorappan C, Kuttan G. Amentoflavone stimulates apoptosis in B16F-10 melanoma cells by regulating bcl-2, p53 as well as caspase-3 genes and regulates the nitric oxide as well as proinflammatory cytokine production in B16F-10 melanoma cells, tumour associated macrophages and peritoneal macrophages. *J Exp Ther Oncol* 2008;7:207-18.
24. Guruvayoorappan C, Kuttan G. Evaluation of the chemoprotective effect of *Biophytum sensitivum* (L.) DC extract against cyclophosphamide induced toxicity in Swiss albino mice. *Drug Metabol Drug Interact* 2006;22:131-50.
25. Guruvayoorappan C, Kuttan G. Immunomodulatory and antitumor activity of *Biophytum sensitivum* extract. *Asian Pac J Cancer Prev* 2007;8:27-32.
26. Illinois Plant Information Network (ILPIN) [Internet]. 1996 [updated 2006 Jul; cited 2013 May 21]. Available from: <http://www.fs.fed.us/ne/delaware/ilpin/ilpin.html> Invasive Species.
27. Venukumar MR, Latha MS. Antioxidant activity of *Curculigo orchioides* in carbon tetra chloride-induced hepatopathy in rats. *Indian J Clin Biochem* 2002;17:80-7.
28. Madhavan V, Joshi R, Murali A, Yoganarasimhan SN. Antidiabetic activity of *Curculigo orchioides*

- root tuber. *Pharmaceutical Biology* 2007;45:18-21.
29. Lakshmi V, Pandey K, Puri A, Saxena RP, Saxena KC. Immunostimulant principles from *Curculigo orchioides*. *J Ethnopharmacol* 2003;89:181-4.
 30. Venukumar MR, Latha MS. Hepatoprotective effect of methanolic extract of *Curculigo orchioides* CCl₄ treated male rats. *Indian J Pharmacol* 2002;34:269-75.
 31. Chauhan NS, Rao CV, Dixit VK. Effect of *Curculigo orchioides* rhizomes on sexual behaviour of male rats. *Fitoterapia* 2007;78:530-4.
 32. Vijayanarayana K. et al. Evaluation of estrogenic activity of alcoholic extract of rhizomes of *Curculigo orchioides*. *J Ethnopharmacol* 2007;114:241-5.
 33. Ayurvedic Pharmacopoeia Committee, Ayurvedic pharmacopoeia. 1st ed. Delhi: Controller of Publications vol 3,2001;47-8.
 34. Bhalerao SS, Vadnere GP, Patil AV, Chirmade HD, Sagar N P. In Vitro Antioxidant Activity of Over ground Parts of *Cynodon dactylon*. *Linn. Pers. International Journal of Herbal Drug Research* 2011;1:7-10.
 35. Dae-Ik Kima, Sung-Hyen Lee, Jin-Ho Choia, Hyun Soon Lillehoj, Mi-Hee Yu, Gun-Soon Lee. The butanol fraction of *Eclipta prostrata* (Linn) effectively reduces serum lipid levels and improves antioxidant activities in CD rats. *Nutrition Research* 2008;28:550-4.
 36. Mi Kyeong Lee, Na Ry Ha, Hyekyung Yang, Sang Hyun Sung, Gun Hee Kim, Young Choong Kim. Antiproliferative activity of triterpenoids from *Eclipta prostrata* on hepatic stellate cells. 2008;15:775-80.
 37. Amritpal singh, Samir malhothra, Ravi subban. Anti-inflammatory and analgesic agents from Indian medicinal plants. *International journal of integrative biology* 2008;3:58-72.
 38. Mahesh Sawant, Jolly CI, Shridhar Narayanan. Analgesic studies on total alkaloids and alcohol extracts of *Eclipta alba* (Linn.) Hassk. *Phytotherapy Research* 2004;18:111-3.
 39. Christyapita D, Divyagnaneswari M, Dinakaran Michael R. Oral administration of *Eclipta albaleaf* aqueous extract enhances the non-specific immune responses and disease resistance of *Oreochromis mossambicus*. *Fish and shellfish Immunology* 2007;23:840-52.
 40. Hemalatha S, Ayyappan T, Shanmugan S, Nagavalli D, Shrivijaya kirubha T. Evaluation of antidiabetic and diuretic activity of polyherbal formulation. *Indian Journal of Traditional Knowledge* 2006;5:468-70.
 41. Roy RK, Mayank Thakur, Dixit VK. Hair growth promoting activity of *Eclipta alba* in male albino rats. *Arch Dermatol Res* 2008;300:357-64.
 42. Cheryl Lans. Comparison of plants used for skin and stomach problems in Trinidad and Tobago with Asian ethnomedicine. *Journal of Ethnobiology and Ethnomedicine* 2007;3:1-12.
 43. Sunita Dalal, Sudhir Kataria K, Sastry K, Rana SVS. Phytochemical Screening of Methanolic Extract and Antibacterial Activity of Active Principles of Hepatoprotective Herb, *Ecliptaalba*. *Ethnobotanical Leaflets* 2010;14:248-58.
 44. Thakur VD, Mengi SA. Neuropharmacological profile of *Eclipta alba* (Linn.) Hassk. *Journal of Ethnopharmacology* 2005;102:23-31.
 45. Jadhav VM, Thorat RM, Kadam VJ, Salaskar KP. Chemical composition, pharmacological activities of *Eclipta alba*. *Journal of Pharmacy Research*.2009; 2(8):1129-1231.
 46. Amritpal Singh, Sanjiv Duggal, Asish Suttee, Jaswinder Singh, Shankar Katekhaye. *Eclipta Alba* Linn. - Ancient remedy with therapeutic potential. *International Journal of Phytopharmacology* 2010;1(2),57-63.
 47. Tewtrakul S, Subhadhirasakul S, Cheenpracha S, Karalai C. HIV-1 protease and HIV-1 integrase inhibitory substances from *Eclipta prostrate*. *Phytother Res* 2007;21:1092-5.
 48. Gao JJ, Cheng DL, Liu XP. Chemical constituents of *Emilia sonchifolia* L. DC. *Zhongguo Zhong Yao Za Zhi* 1993.18(2):102-103.
 49. Muko KN, Ohiri FC. A preliminary study on the anti inflammatory properties of *Emilia sonchifolia* leaf extracts. *Fitoterapia* 2000;71:65-8.

50. Gayathri Devi D, Lija Y, Cibin TR, Biju PG, Gayathri Devi V, Annie A. Evaluation of the protective effects of *Emilia sonchifolia* (L.) DC on perchlorate-induced oxidative damage. *Journal of Biological Sciences* 2006;6:887-92.
51. CHEN Xiao-wei, WEI Yuan-yuan, ZHOU Wu-ping, PAN Ming-jian, LI Jung-sheng. Study on separation and the anti-microbial effects of the total flavanoids of *Emilia sonchifolia*. *Food Science and Technology* 2009;1(1):163-165.
52. Shylesh BS, Padikkala J. In vitro cytotoxic and anti-tumour activity of *Emilia sonchifolia* (L.) DC in mice. *J Ethnopharmacol* 2000;73:495-500.
53. Shylesh BS, Nair SA, Subramaniam. Induction of cell-specific apoptosis and protection from Dalton's Lymphoma challenge in mice by an active fraction of *Emilia sonchifolia*. *Indian Journal of Pharmacology* 2005;34:232-37.
54. Comfort C, Monago, Ogbonnaya AE. Effects of aqueous extract of *Emilia sonchifolia* on some liver enzymes in Dithizone-induced diabetes in rabbits. *Nigerian Journal of Biochemistry and Molecular Biology* 2009;24:8-15.
55. Goyal PR, Singh KP. Shankhpuspi (*Evolvulus alsinoides* Linn.): a medicinal herb. *Int J Mendel* 2005;22:124.
56. Gupta P, Siripurapu KB, Ahmad A, Palit G, Arora A, Maurya R. Anti-stress Constituents of *Evolvulus alsinoides*: An Ayurvedic Crude Drug. *Chem Pharma Bull* 2007;55:771.
57. Dash GK, Suresh P, Sahu SK, Kar DM, Ganapaty S, Panda SB. Evaluation of *Evolvulus alsinoides* Linn. for anti-helminthic and anti-microbial activities. *J Nat Red* 2002;2:19-22.
58. Tharan NT, Vadivu R, Palanisamy M, Justin V. Antibacterial Activity of *Evolvulus alsinoides*. *Indian Drugs* 2003;40:585-6.
59. Siripurapu KB, Gupta P, Bhatia G, Maurya R, Nath C, Palit G. Adaptogenic and anti-amnesic properties of *Evolvulus alsinoides* in rodents. *Pharmacol Biochem Behav* 2005;81:424-32.
60. Purohit MG, Shanthaveerappa BK, Badami S, Swamy HKS, Shrishailappa B. Antiulcer and anticholinergic activity of alcoholic extract of *Evolvulus alsinoides* (Convolvulaceae). *Indian J Pharma Sci* 1996;58:110-12.
61. Purohit MG, Shanthaveerappa BK, Badami S, Swamy HKS. Antiulcer And Anticholinergic Activity Of Alcoholic Extract Of *Evolvulus Alsinoideis* (Convolvulaceae). *Indian Journal of Pharmaceutical Sciences* 1996;58(3):110-112.
62. Ratnasooriya WD, Hewageegana HGSP, Jayakody JRAC, Ariyawansa HAS, Kulatunga RDH. Gastroprotective activity of *Evolvulus alsinoides* L. powder. *Aust J Med Herbalism* 2005;17:55-60.
63. Ganju L, Karan D, Chanda S, Srivastava KK, Sahwney RC, Selvamurthy W. Immunomodulatory effects of agents of plant origin. *Biomed-Pharmacother* 2003;57:296-300.
64. Majumder S, Nishteshwar K. Pharmacognostical and Phytochemical investigation of *Ipomea sepiaria* Koenig Ex. Roxb. Leaf. *International Research Journal of Pharmacy* 2013;4(1):212-217.
65. Gupta M, Mazumder UK, Manikandan L, Haldar PK, Bhattacharya S, Kandar CC. Antibacterial activity of *Vernonia cinerea*. *Fitoterapia* 2003;74:148-50.
66. Kumar PP, Kuttan G. *Vernonia cinerea* L. scavenges free radicals and regulates nitric oxide and proinflammatory cytokines profile in carrageenan-induced paw edema model. *Immunopharmacol Immunotoxicol* 2009;31:94-102.
67. Pratheesh Kumar P, Kuttan G. Ameliorative action of *Vernonia cinerea* L. on cyclophosphamide-induced immunosuppression and oxidative stress in mice. *Inflammopharmacology* 2010;18:197-207.
68. Iwalewa EO, Iwalewa OJ, Adeboye JO. Analgesic, antipyretic, anti-inflammatory effects of methanol, chloroform and ether extracts of *Vernonia cinerea* less leaf. *J Ethnopharmacol* 2003;86:229-34.
69. Kuo YH, Kuo YJ, Yu AS, Wu MD, Ong CW, Yang Kuo LM, Huang JT, Chen CF, Li SY. Two novel sesquiterpene lactones, cytotoxic vernolide-A and -B, from *Vernonia cinerea*. *Chem Farm Bull* 2003;51:425-6.

70. Goyal M, Pareek A, Nagori BP, Sasmal D. *Aerva lanata*: A review on phytochemistry and pharmacological aspects. *Pharmacogn Rev* 2011;5:195-8.
71. Pandey G. *Dravyaguna Vijnana*. reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.72-3.
72. Sakthivel KM, Guruvayoorappan C. *Biophytum sensitivum*: Ancient medicine, modern targets. *J Adv Pharm Technol Res* 2012;3:83–91.
73. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.384-6.
74. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.20.
75. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p. 21.
76. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p. 633.
77. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p. 634.
78. Jolly CI, Narayanan P. Pharmacognosy of Aerial Parts of *Cynodon dactylon* Pers. (Graminae). *Anc Sci Life* 2000;19:123-9.
79. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.628.
80. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.375.
81. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.91.
82. *Evolvulus alsinoides* [Internet]. 2012 [cited 2013 Jul 11]. Available from: http://ayurvedicmedicinalplants.com/index.php?option=com_zoom&Itemid=26&page=view&catid=5&key=7
83. Lakshmana [Internet]. 2012 [cited 2013 Jul 11]. Available from: http://ayurvedicmedicinalplants.com/index.php?option=com_zoom&Itemid=26&page=view&catid=41&key=7
84. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.269.
85. Pandey G. *Dravyaguna Vijnana*. 1st reprint ed. Varanasi: Chowkhamba Kriashnadas Academy: 2004. p.270.
86. Ekong MB, Ekeoma AO, Igiri AO, Ekanem TB. Behavioural patterns of rats in an open field following treatment with Artesunate plus Amodiaquine combination. *African Scientist* 2010;11(3):195-202.
87. Biodiversity Hotspots [Internet]. Washington: Conservation International: [updated 2005 Feb; cited 2013 Jul 16]. Available from: http://www.cnrs.fr/inee/recherche/fichiers/Biodiversite_hotspots.pdf
88. Calicut University Botanical Garden [Internet]. Calicut: University of Calicut: [updated 2009 Aug 17; cited 2013 Jul 16]. Available from: http://www.universityofcalicut.info/index.php?option=com_content&task=view&id=42&Itemid=309
89. Biodiversity [Internet]. Thiruvananthapuram: Government of Kerala: 2002[cited 2013 Jul 16]. Available from: <http://www.prd.kerala.gov.in/biodiv.htm>
90. The Ayurvedic Pharmacopoeia of India. Delhi: The Controller of Publications 2001. p.21-4.

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