



## REVISITING NIRYASA-AYURVEDIC PROSPECTIVE OF PLANTS

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### ABSTRACT

Indian System of Medicine depends largely upon Plants and plant products to be used as source of medicine. Plants secretory products such as gum, resins and latex are collectively referred to as Nirayasa. In ancient Vedic text, Ayurveda are known for their variety of effects upon human body with very little side effects. They also find use in modern industry as adhesives, Printing, textiles, paper, paint and candy manufacturing. This article is an effort to gather knowledge of Nirayasa and make it more effective for Clinical purpose.

**Keywords-** Niryasa, Botanical, Oleogum resin

### INTRODUCTION

Niryasa is collective term used in Ayurveda to denote all semi solid or solid exudates such as gums, oleo-gums. oleo-resin, oleo-gum-resin and sometimes the dried latex also.

Niryasa broadly includes all types of secretory products like gum, resins and sometimes latex. Secretory products are secretions obtained either naturally or by making incisions to the plant.

Acharva Charaka hints at 18 types of botanicals in his work. While, Acharya Kaiyyadeva, the author of Kaiyyadeva nighantu described 10 important parts (dashanga) of the plant that can be used in The therapeutics. These include pushpa (Flower),phala(fruit), twacha (bark). moola(root). patra(leaf). sara(heart wood). niryasa(oleo-gum-resin), shaka(branch). shunga(bud) and dugdha (latex). Among them, the formation of dugdha (latex) and niryasa (oleo-gum- resin) in a plant has altogether different reasons. They are formed and secreted in response to a stimulus that threatens the survival of the plant such as injury and infection. Both are produced as a part of defense mechanism and are species specific. It is a common observation that secretion of the latex is an immediate response of the

plant to the stimulus. But, the secretion. of oleo-resin is a slow process. Resinous substances may occur alone or in combination with essential oil (oleo- resin) or gum (oleo-gum) or with both (oleo-gum-resin).

## AVAILABLE EXUDATES IN CLASSICS

### Afeem

The Nirayasa obtained from fruit of Ahiphena(Papaver somniferum L) of family Papaveraceae. It is the dried latex obtained by the incision from the unripe fruit capsules of Papaver somniferum. It contains Phenanthrene and Isoquinilones. The Ayurvedic properties includes -Rasa is Tikta, Katu. Vipaka is katu, Guna is light, riksha, suksma, Vyayayi, Vikasi. It's actions include Shoshana, Grahi, Kaphahara, Cats Kara, Pittala.

### Anjana

It obtain from the stem of tree Kingiodendron pinnatum(DC.) Harms. of family leguminosae. It contains Terpenes, Flavonoids, Tannins. Oleo-gum-resin used in gonorrhoea, catarrhal conditions of genito-urinary and respiratory tracts. It is also used in sores of elephants.

### Silhaka/Shilarasa

It is obtained from stem bark of tree Altingia excess Noronha of family Altingiaceae. The resin is blackish or brownish in color. The resin is available if a cut is made in the trunk of the tree. It contains Benzoic acid, cinnemic acid. It's rasa is Tikta, katu, Madhur. Vipaka is katu and Guna is Snigdha, laghu. Veerya is Ushna.Its actions include kustaghna, jwaraghna, kapha vatahara. The resin of the plant Silhaka is dissolved in hot water or added with honey in a dose of 500 mg and given in patients suffering from cough, dyspnea (difficulty in breathing).

The resin is dissolved in water and given in retention of urine, burning micturition.

The resin of the plant Altingia excels Noronha is a good aphrodisiac.

The paste from the resin of the plant is applied externally to treat skin diseases.

The resin of the plant is applied over the fresh wounds.The resin is mixed with luke warm oil and applied externally to treat pain in the joints, weakness of the muscles and other diseases arising due to vitiation of Vata dosha.

The decoction using the resin is prepared and given in patients suffering from dysmenorrhea.

### Gaushira

It obtained from the stem just above the root of herb Ferula galbaniflua Bioss. & Buhse. Of family Apiaceae. It contains Terpenes, Sulphur, umbellifeone. Galbanum resin was also used to dress inflamed and abscessed wounds.

### Ushaka

It obtained from the stem of herb Dorema ammoniacum D. Don of family Apiaceae. It contains volatile oil, salicylic acid, Beleric acid. The rasa of ushaka Nirayasa is Tikta and katu. Vipaka is katu. Guna is laghu, ruksha.A gum resin is found in cavities in the tissues of stems, roots and petioles.It often exudes naturally from holes in the stems caused by beetles though this is not so pure as that obtained from the plant tissues. The resin is antispasmodic, carminative,

diaphoretic, mildly diuretic, expectorant, poultice, stimulant and vasodilator. It is often used internally in the treatment of chronic bronchitis (especially in the elderly), asthma and catarrh. Externally, it is used as a plaster for swellings of the joints and indolent tumours.

### **Sakmuniya**

It obtained from the root of herb *Convolvulus pseudoscammonia* C. Koch of family Convolvulaceae. It contains Scammonin.

### **Vanvrintaka(Giriparpati) niryasa**

It obtained from the root, rhizome of herb *Sinopodophyllum hexandrum* (Royle) T. S. Ying of family Berberidaceae. It contains Astragalin, Podophyllotoxin. The rasa of niryasa is tikta, katu. Vipaka is katu, Guna is Laghu, Teekshna. It act as rechaka.

### **Nadihingu**

It is obtained from the stem of tree *Gardenia gummifera* L.f of family Rubiaceae. It contains Olcanonic acid, B sitosterol, Gardenin. The rasa of nirayasa is katu, Tikta. Vipaka is katu and Guna are Laghu, ruksha, teekshna. It is vibandgahara and vatanulomaka.

The gum resin oozes from the leaf buds/shoot tip of this tree in the form of yellow transparent tears. The resin has a strong offensive, disagreeable odour and pungent taste.

### **Blue gum(Tailaparni)**

It is obtained from the stem of tree *Eucalyptus globules* Labill of family Myrtaceae. It contain Tannin, cineol. The rasa is kashaya, vipaka is katu, Guna are Laghu, Snigdha. It is grahi.

### **Red gum(Tailaparni)**

It is obtained from stem of tree *Eucalyptus rostrata* Sm. Of family Myrtaceae. It contains Tannin and cineol. The rasa is kashaya, vipaka is katu, Guna are Laghu, Snigdha. It is grahi.

### **Citron gum(Tailaparni)**

It is obtained from the stem of tree *Corymbia maculata*(Hook) K. D. Hill & L. A. S. Johnson of family Myrtaceae. It contain Tannin, cineol. The rasa is kashaya, vipaka is katu, Guna are Laghu, Snigdha. It is grahi.

### **Jinghan gum(Gudamanjari)**

It obtained from stem, Branch of tree *Manner coromandelica*(Houtt.) Merr. Of family Anacardiaceae. It contains D-galactose, L-arabinose. It's rasa is Madhur, kashaya. Vipaka is katu. It is varna hara, cats hara and rujapaha.

### **Butea gum(Palash)**

The gum resin obtained from the stem of tree *Butea monosperma*(Lam.) Taub. Of leguminosae family. The gum resin exudes from natural cracks and artificial incision. It contains Leucocyadins, Procyandin. It's rasa is Madhur,

kashaya. Vipaka is Madhur. Guna are Laghu, snigdha. It is vrishya and Balya. In classics it mentioned in yonivyapat chikitsa.

### **Indian kino gum(Beejak)**

It is obtained from the stem of tree *Pterocarpus marsupium* Roxb. Of family leguminosae. It is collected and dried in the sun or shade, and yield of dried gum is approximately 340 gm per tree. It occurs in small, angular, glistening, brittle fragments. It is odourless and bitter with astringent taste and colours saliva pink when masticated. It contains kinotannic acid, pyrocatechin, pectin. It's rasa is kashaya, vipaka katu. Guna is Laghu, ruksha. It is Santa Shula hara.

### **Babbula nirayasa**

The gum resin is obtained from stem of tree *Acacia nilotica*(L.) Delile of family leguminosae. It contains Galactoaraban. It's rasa is Madhur, kashaya. Vipaka is Madhur. Guna is Snigdha. It is Vrishya, Shothahara, Balya. It is not the true gum Arabic. The true gum Arabic obtained from *Acacia senegal*.

Two varieties of gum are gum babbul and gum ghatti

Gum babbul consists of gum of acacia species and gum ghatti found mixed with gums of *Anogeissus latifolia*, *Azadirachta indica*, and *Feronia -5 kg per elephantum* Correa. It has only 40% of acacia gums.

### **Hingu**

The oleoresin gum resin obtained after making incision at upper part of taproot of herb *Ferula narthex* Boise of Apiaceae. The hing extracted from single plant is approx 200-600gm. It has volatile oil containing sulphur, a-pinene. It's rasa is katu. Vipaka katu. Guna are Laghu, Snigdha, teekshna. It is deepana, sanjnasthapana, chedana., vatakapha prashamna and includes in katuskandha dravya by Aacharya Charaka. It help in digestion of dietary lipids by stimulating bile flow and enhance activities of enzymes of pancreas and small intestine.

### **Lohbana**

The resin obtained from stem of tree *Styrax benzoin* Dry and of family Styraceae. From 7-10 yr old tree tapping of resin started and three flows can be collected after tapping once a year. A tree produce approx 200-500gm resin from first flow. In starting when resin collected, it is pale in colour but darkens like sandy orange in colour after storage. It contains Benzoic acid, cinnamic acid, vanilline. It's rasa is Madhur, Tikta. Vipaka is Madhur. Guna are Laghu, ruksha, teekshna. Its action are chedana and kasahara.

### **Rakta nirayasa**

The resin gum is obtained from fruit of tree *Daemonorops draco*(Willd.) Blume. Of family Aracaceae. It contains Pterocarpol, Di Pterocarpol. It's rasa is kashaya. Vipaka is katu. Guna are Laghu, ruksha. It has stambhana karma.

### **Shri veshtaka**

The oleoresin is obtained from stem of tree *sarala*(*Pinus Roxburghii* sarg.) Of family Pinaceae. The oleoresin is yellow colour when solidify. It contains Pinene, Carene, Longifolene, Tarpine. It's rasa is katu, tikta, Madhur. Vipaka is katu. Guna are Laghu, teekshna, snigdha. It is Sleshmaputihara.



## Ganja

It is obtained from leaf of herb *Cannabis sativa* L. Of family Cannabinaceae. It contains Resin, Cannabinol, Tetra hydro cannabinol. It's rasa is Tikta. Vipaka is katu. Guna are Laghu, teekshna. It is Medaka, Deepana.

## Karpooora

The oleoresin is obtained from stem of tree *Cinnamomum camp hora*(L.) J. Presl of family lauraceae. It contains Campherol, Cineol, Pinene, camphene. It's rasa is Tikta, katu, Madhur. Vipaka is katu. Guna are Laghu, teekshna. Karpoor is kustahara, lekhana, kandughna, kshayahara, Charaka mentioned karpura mukhasugandhika dravya. Karpoor is of two type Apakva karpura-it is artificially prepared using plant parts.it floats on water. Pakva karpoor obtained from cut openings of tree. It sinks in water.

## Rumimastagi

The gum resin is obtained from stem, branch of tree *Pistacia lentiscus* L. Of Anacardiaceae. It contains Masticoracin, Masticonic acid. It's rasa is Madhura, kashaya. Vipaka is Madhura. Guna is Laghu, ruksha. It is mutual, Vrishya, Deepana, Sangrahi.

## Laksha(Koshamra)

The resin gum is obtained from stem branch of tree *Schleichera oleosa*(Lour.) Merr. Of family Sapindaceae. The resinous secretion which it known as stick lac contains about 4-5% wax and 1% water-soluble colouring material known as lac-dye.It contain lac acid, laccin, resin. It's rasa is kashaya. Vipaka is katu. Guna are Laghu, Snigdha. Its actions are stambhana, kustaghna. It is also has anti obesity, deobstruent property. It is excellent liver tonic.

## Kunduru(Shallaki nirayasa)

The oleoresin gum resin is obtained from stem of tree *Boswellia serrata* Roxb. ex Colebr of family Burseraceae. The oleogum resin is transparent, golden yellow. After concretion it turns into brownish yellow in colour. It contains *Boswellia* oil, resin, gum. It's rasa katu, Tikta, Madhur. Vipaka is katu. Guna are Laghu, teekshna, ruksha. It is twachya, purisha sangrahaniya, stambhana Kara.

## Bola (Myrrh)

The oleoresin gum resin is obtained from the stem of tree *Commiphora myrrh*(News) Engl of family Burseraceae. It exudes yellowish oleoresin. It has volatile oil containing Terpenes, sequiterpenes, esters, cuminic aldehyde and eugenol. Oil of myrrh is a valuable ingredient in perfumes (balsamic, heavy odour). In more recent times, the gum has found medical usage as an antiseptic, the tincture being applied to inflammatory and ulcerated conditions of the throat and mouth. The rasa of niryasa is Tikta, katu, kashaya. Vipaka is katu. Guna are Laghu, ruksha. Its action is stambhana.

## Kattira niryasa

It obtained from stem bark of tree *Cochlospermum religiosus*(L.) Alston of family Bixaceae. It contains polysaccharides, Galalacturonic acid. Its rasa is kashaya, Madhura, katu. Vipaka is Madhura. It is Balya, Vrishya, Grahi, shoohara and stambhana.

## Dhava

The gum resin obtained from the stem bark of tree *Anogeissus latifolia*(Roxb.ex DC.) Wall. ex Guillem. & Perr of family Combretaceae. It used as alternative to Babbula(gum Arabic). It also known as gum ghatti.

The dried gum exudate is collected in the form of glassy nodules. Then it is subjected to series of processes like dissolution, filtration, sterilization and spray drying, which is then powdered and used. It contains Tannin. The rasa of nirayasa is kashaya. Vipaka is katu. Guna are Laghu, ruksha. It is mutrasangarahaniya, vedanasthapana.

## Kankustha

The gum resin is obtained from stem bark, leaf, flower, fruit of tree *Garcenia morella*(Gaertn.) Desr. Of Clusiaceae family. It is yellow coloured gum resin obtained by the incision of Tamala tree. And it's chemical constituents are Garcinolic acid, Morellin. The incision is done in Spiral manner during rainy season. The resin after drying called Gamboge. It is pungent in taste and available in market in brownish yellow colour. The rasa of kankustha nirayasa is katu, Tikta. Vipaka is katu. Guna are Laghu, ruksha. It is rechaka and krimighna.

## Raala

The oleoresin is obtained from stem bark of tree (shaala) *Shorea robusta* Gaertn of family Dipterocarpaceae. The resin is whitish liquid when oozes out from grooves and after drying it becomes brown in colour. Three crops are obtained in a year and the first one is of best quality. Chua oil is obtained after distillation process of saala resin. It's chemical constituents are Epi-taraxastanonol, B-sitosterol, dipterocarpol. The rasa of nirayasa is kashaya, Madhura. Vipaka is katu. Guna is ruksha. It's action includes vrana ropana, stambhana and sandhaniya.

Khadira(khair gum/gum Acacia)

The gum resin obtained from the cracked barks of tree *Acacia catechu* and it is used as substitute of gum Arabic. The gum is pale yellow in colour. It is thicker than Babbul gum. The gum is sweetening in taste. It is used in wounds, dryness. Approx 250gm of gum obtained per annum from the tree of *Acacia catechu*. It can be from range of few grams to 10kg.

## Vamshalochana

It is obtained from *Bambusa arundinacea*. It is secreted from joints and surface injuries of Bamboo. It is yellow in colour. It is Sweet, cold, clears heat, resolves phlegm, anti convulsive, antipyretic, mostly used in feverish conditions of children and epilepsy.

Tavaksheer obtained from bamboo used in many Ayurvedic formulations and known as bamboo silica. These formulations of Tavaksheer used in lung diseases.

## Shigru

The gum resin is obtained from the stem of tree *Moringa oleifera*. In fresh condition, it is white in colour and after dryness it become reddish brown or brownish black in colour. It swells and gives viscous solution in water.

## Khadira

It obtained from *Acacia Catechu Willd* in form of thick and frothy liquid from its bark. It is pale yellow in colour and gives thick mucilage, sweet in taste and with cold water form strong mucilage. It is a good Substitute of true gum Arabic.

## Nimbanirayasa

The gum resin is obtained from the bark of *Azadiracta indica A. Jussexudates*. It is clear, bright, amber in colour when fresh and after time it becomes black in colour. It is substitute of *Acacia gums*. The resin is bitter in colour. The gum freely produced from the trees of drier area but in wet area the gum is spoiled before collection.

## Arimeda

The gum is obtained from the *Acacia farnesiana willd*.

## Kumari nirayasa(Aloe)

The gum resin obtained from *Aloe barbadensis Miller*.

## Charas

The latex is obtained from leaves of *cannabis sativa L*. The head of female flower are collected and crushed, squeezed and the resin is scraped off. When it kept for some time it becomes grey and brownish and loses its narcotic activity.

## Sarjarasa

It is obtained from the stem bark of tree *veteria indica L*. Of family *Dipterocarpaceae*. The resin obtained by semi circular incisions on the stem bark. It contains essential oil, Camphene, a & B pinene. The rasa of nirayasa is kashaya, tikta. Vipaka is katu. Guna is ruksha. It's actions are stambhana, kustaghna, Visphota hara, Vatajit.

## Garjana tel

The oleoresin obtained from stem bark of tree *Ashwakarna (Di Pterocarpus turbinatus C. F. Gaertn* of family *Dipterocarpaceae*. In India the resin is collected by cutting a hole into centre of tree. Approx 180 litres of resin obtained per season from best tree. The collected resin is milky and faintly acidic. Its constituents are Damerenediol 2, Betulonic acid. It's rasa is kashaya, Madhura. Vipaka is katu. Guna is ruksha. It is kustaghna, kothaprashamana.

## Bhimaseni karpooa

The oleoresin obtained from the stem bark, branches of tree *Dryobalanop sumatrensis(J.F.Gmel.) Kosterm*. Of family *Dipterocarpaceae*. It is heavier than *Cinnamomum camphora*. In solid form, it occurs in white crystalline translucent fragments. It contains alpha caryophylline, B caryophylline, alpha pinene. The rasa of nirayasa is Tikta, katu, madhura. Vipaka is katu. Guna are Laghu, teekshna. It is kustahara, lekhana, kandughna, kshayahara.

## Mocha rasa

The gum obtained from the stem bark of tree *Bombax ceiba* L. Of family Malvaceae. the gum is not exudes from artificially made wounds on healthy bark. It exudes from naturally wounds caused by decay or by insects. The gum is edible. It is astringent, tonic and demulcent. Charaka mentioned shalmali nirayasa in preparation of picchabasti given in Arsha. The nirayasa contains Gallic acid, Tannic acid, D-galactopyranose. The rasa is kashaya. Vipaka is katu. Guna is Laghu, Snigdha, Picchila. It is kapha pitta hara, Stambhana, Vranahara.

## Guggulu

The oleogum resin is obtained from the stem of tree *Commiphora mukul* (Hook.ex stocks) of family Burseraceae. The colour of gum resin is yellowish. By making incision on bark the trees are tapped. Before collection of gum resin, it is allowed to get solidify. The gum resin collected in month of May to June after tapping the tree in month of November to January. Five types of Guggulu mentioned in Ayurvedic classics- Mahisaksha, Mahaneel, Kumuda, Padma, Hiranyaksha. Mahisaksha and Mahaneel used in treating elephants, kumuda, Padma in horse treatments. In human treatment Hiranyakshais guggulu is used. The gum resin contains Z-guggulsterone, E-guggulsterone, Guggullignans 1&2. The rasa is Tikta, katu. Vipaka is katu. Guna is Laghu, ruksha, teekshna, vishada, suksma, Sara, sugandhi. Its action includes lekhana, Sandhaniya, Swarya, rasayana, Balya.

## Discussion

As a result of increasing plant temperature, the liquid which is secreted from plant is known as Nirayasa (resinous substance). The increase temperature indicates the defensive mechanism of plants. The resinous substance on plant surface plays important role in defensive mechanism by killing pathogens and by sealing the injured part of plant. The Nirayasa mentioned in classics like in *audbhigana* of Charaka, *sthavaravisha* of Sushruta and *dashanga* of Kaiyadeva Nighantu shows the significance in chikitsa. Many formulations in Ayurveda include gum and resins as their important component. Exudates contain high number of secondary metabolites, so they are more effective, hence dose will be minimum. This review will act as catalyst in forthcoming research and investigation and can be used as effective tool in clinical practices.

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