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**PHYTO-PHARMACOGNOSTIC AND PHARMACO-THERAPEUTICAL REVIEW ON  
JAPA (*HIBISCUS ROSA-SINENSIS*)**

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**ABSTRACT**

The plant Japa botanically identified as *Hibiscus rosa-sinensis* Linn. Of the family malvaceae is a glabrous shrub widely cultivated in the tropics as an ornamental plant and has several forms with varying colors of flowers. In medicine, however, the red flowered variety is preferred. In this article an attempt has been made to review on Japa from different classical texts. The parts used are Flowers, leaves and root and it is very effective in indraluptanashana (alopecia areata), garbhanirodhaka (anti-implantation), Pramehaghna (anti-diabetic), jvara (fever) etc. and many of the formulations like japataila, Chemparuthyadikeratailam, Vidangadi yoga etc. contains it as a one of the ingredient.

**KEYWORDS**

Japa, *Hibiscus rosa-sinensis*, Keshya and Ayurveda.

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**INTRODUCTION**

Japa botanically identified as *Hibiscus rosa-sinensis* Linn. Of the family malvaceae, has been used by the Ayurvedic physicians for the indralupta, pramehagarbhanirodhaka and so many conditions. The parts used are Flowers, leaves and root. In this article an attempt has been made to review on Japa from different classical texts.

**CHRONOLOGICAL REVIEW**

**HISTORICAL REVIEW**

**VEDIC PERIOD<sup>1</sup>**

The *Hibiscus* flowers are used in the worship of Hindu deities, especially Goddess Durga / Kali. The  
March – April

glowing complexion of the Devi is often compared with the beauty of the flower, In Lalitopaakhyaana. The Sun God is also compared with the Hibiscus flower. A famous Shloka in praise of the Sun God begins - 'Japa kusumasankarsham, kashyapeyammaha-dyuthim'.

#### **Samhita Period**

No reference regarding japa is available in Samhita period.

#### **Nighantu Kala<sup>2-4</sup>**

Most of the nighantus quote japa. Like Amarakosha, Paryayaratnamala and Raja nighantu. Raja nighantu explained it in karaviradivarga.

It is explained in Pushpavarga of Bhavaprakashnighantu.

It is explained in Vanaushadhivarga of Amarakosha as java.

#### **Adhunika Kala**

Database on medicinal plants used in Ayurveda and Ayurvedic Pharmacopoeia of India have described japaas Hibiscus rosa-sinensis Linn. There is information about the Morphological features, Vernacular names, Microscopic features, Phytochemicals and Therapeutic uses.

It is explained in karpasadivarga of nighantuadarsha.

And also in pushpayurveda the therapeutic uses have been explained.

Its folklore practice is documented in few books like paramparika vaidyachikits amahitidravayakosha in Karnataka and sarvarogachikitsaratnam in Kerala and few other books like flora of Shimoga etc.

#### **BHEDA / VAREITIES**

There are certain varieties based on flower colour

Rakta- Hibiscus rosa-sinensis

Nila-Hibiscus syriacus

Peeta- Hibiscus brackenridgei

Shveta-Hibiscus arnottianus

There are 5000 varieties in China rose.

#### **RASA PANCHAKA<sup>3</sup>**

Katutiktamadhura rasa, laghusnigdha guna, sheetavirya and katuvipaka.

#### **Karma<sup>2,3</sup>**

Kaphavatahara

#### **Rogagnata<sup>2,3</sup>**

Chardijanani, Jantujanani, Vishahara, Prameha, Indraluptanasha, Puyameha, Pradara, Garbhanirodhaka.

#### **Amayika Prayoga**

- Phiranga- kwatha out of japa leaves wash heals phiranga.
- Moola and patra kwatha are said to be helpful in garbhaposhana.

#### **MALVACEAE FAMILY<sup>5-7</sup>**

##### **Characters of Malvaceae**

Stellate hairs on the young parts, mucilaginous juice present, leaves alternate, stipulate, multicostate reticulate, inflorescence solitary or cyme; flower actinomorphic, hermaphrodite, hypogynous, pentamerous, with epicalyx, calyx free or united, corolla free, stamens indefinite, monadelphous, anthers monotheous, stamens united to form a tube; gynoecium many often five, syncarpous, ovary multilocular, superior, axile placentation; fruit schizocarpicarcerulus or capsule.

Pollen grains large spherical, spiny and together with monotheous anthers form one of the distinguishing characters of the family. The numerous stamens are supposed to have arisen by multiplication of five epipetalous members.

##### **A. Vegetative characters**

###### **Habit**

The plants are generally herbs (Abutilon, Malva, Sida, Urena), shrubs (Hibiscus, Gossypium), and a few trees (Gossypium arboreum) with a mucilaginous sap in all parts. Usually young parts of the plants are covered with stellate hairs.

###### **Root**

Tap root, branched.

###### **Stem**

Herbaceous (Malva) or woody (Hibiscus), branched, erect or spreading (Sida, Malva parviflora) pubescent with stellate hairs.

###### **Leaves**

Alternate, petiolate, stipulate, stipules deciduous (Malva), simple, entire or palmately divided or

lobed, margin wavy or serrate, apex acute, multicostate reticulate venation.

## **B. Floral characters**

### **Inflorescence**

Solitary axillary (Hibiscus, Urena), solitary terminal (Abutilon), raceme (Althaea), panicle (Kydia).

### **Flower**

Pedicel late, bracteate, bracteolate in the form of epicalyx, hermaphrodite rarely unisexual (Napaea), complete, actinomorphic, pentamerous, hypogynous.

### **Epicalyx**

Epicalyx 3 (Gossypium), 7 to 9 (Althaea) and in a few totally absent.

### **Calyx**

Sepals five, connate at the base, persistent, sometimes forming a tube (Urena), valvate aestivation.

### **Corolla**

Petals 5, polypetalous sometimes slightly connate at the base with the staminal tube-thus epipetalous, large showy, twisted. Prominent veins can be observed on the petals.

### **Androecium**

Stamens indefinite, monadelphous, forming a staminal tube; epipetalous staminal tube united with the corolla, anthers monotheous, reniform, basifixed, filament short, introrse.

### **Gynoecium**

Multicarpellary usually five (Hibiscus) or ten (Althaea) indefinite (Abutilon) or 3 (Kydia); syncarpous, ovary superior, penta or multilocular with axile placentation, ovules one to many in each loculus; style one, long, passing through the staminal tube; stigma correspond to the number of carpels.

### **Fruit**

Schizocarpicarcerulus (Abutilon, Malva, Sida), capsule (Hibiscus, Gossypium), berry (Malvaviscus).

### **Seed**

Non-endospermic, in some genera seed coat is densely tomentose (Gossypium).

## **Pollination**

Entomophilous. Insects are attracted for nectar, showy nature of corolla and protandrous flowers.

## **Distribution of Malvaceae**

It is a native of china. It is grown as an ornamental plant in gardens throughout India and often planted as a hedge or fence plant it is commonly called cotton family or mallow family. The family consists of about 85 genera and 1500 species among which 111 species found in India. The plants are almost cosmopolitan in distribution but many of which are confined to tropics and sub-tropics.

## **ETYMOLOGY OF THE WORD<sup>8</sup>**

Hibiscus rosa-sinensis which dioscorides identified with the Marshmallow.

Hibiscus –a plant of the mallow family, grown in warm climates for its large brightly colored flowers or for products such as fibre or timer.

The plant with deep-red flowers is believed to have an Asian origin, hence the name rosa-sinensis.

## **BOTANICAL DESCRIPTION<sup>9-14</sup>**

### **DESCRIPTION OF THE PLANT**

Roots: Cylindrical of 5-15 cm length and 2 cm in diameter, off white in colour light brown transverse lenticies. Its fracture is fibrous. Roots taste sweet and mucilaginous.

Leaves: Leaves are simple ovate or ovate-lanceolate. Leaves are entire at the base and coarsely toothed at the apex. Taste is mucilaginous.

Flowers: Flowers are pedicillate, actinomorphic, pentamerous and complete'. Corolla consists of 5 petals, red in colour and about 3 inches in diameter.

Fruit: The fruit (very rarely formed) is a capsule about 3 cm long.

Varieties: Many varieties exist differing in size and colour, in single (or) double forms. The important colours include Red, White, Yellow, and Light Red.

## **PHARMACOGNOSY**

### **Macroscopic characters**

Flowers ebracteate, pedicel late, complete, regular, actinomorphic, bisexual, protandrous, hypogynous, cyclic, epicalyx 5, free, green, linear.

Calyx 5, gamosepalous, campanulate, inferior, green.

Corolla 5, polypetalous, obovate, sinuous upper margin, mucilaginous, twisted, inferior, red.

Androecium many, monadelphous, epipetalous, antisepalous.

Gynoecium pentacarpellary, syncarpous, superior, style united below and free at its tips, stigma 5, capitate, velvety red.

Odorfragrant; taste mucilaginous.

#### Microscopic characters

1. Root – The roots show cork, phelloderm and the secondary phloem which is stratified due to 8-10 tangential bands of phloem fibres alternating with parenchyma. The xylem is a broad zone and some of the vessels show tyloses. Clusters of calcium oxalate are present in the phelloderm.
2. Stem – Microscopically it shows outermost thin cork, the middle region of which is strongly thickened due to the heavy deposition of lignin. Phelloderm is narrow zone followed by a wide zone of secondary phloem. Mucilage cells are present in the pith. Powder mounted in nitrocellulose give green fluorescence under UV light.
3. Leaf – Leaf present a dorsiventral structure. Both the glandular and stellate types of trichomes are present. Stomata are of ranunculaceous or rubiaceous type, present on the lower surface. A few mucilage cells are present in the midrib zone. Starch grains and clusters of calcium oxalate crystals are present. Powdered leaf when treated with 1 N NaoH in methanol emits dark green fluorescence under UV light.
4. Flower – Flower powder shows spheroidal, pantoporate, pore-circular pollen grains ; stellate trichomes single, elongated, conical or twisted and convoluted; glandular trichomesuni or bi- seriate, multicellular-cylindrical and bi- or multiseriate, multicellular-globose or clubshaped; ranunculaceous type of stomata; sphaeraphide calcium oxalate crystals.

#### Powder microscopy

Purplish red. Shows cluster crystals of calcium oxalate; large, spinuous and yellow pollen grains; glandular, multicellular trichomes, as well as covering stellate type trichomes; fragments of calyx tissue bearing anomocytic stomata and stellate and glandular trichomes; spiral vessels and cluster crystals and fragments of ovary with stellate trichomes, fragments of style with stomata. Trichome and cells with red contents, fragments of anther with pollen grains, fragments of hairy stigma with reddish pigments, spinuous walls and trichomes.

#### CULTIVATION AND PROPOGATION

Hibiscus rosa-sinensis grows best under moderate temperature and relatively high humid conditions. It thrives best on well drained porous loamy soil. The plant is usually propagated by cuttings, preferably from mature wood of current year growth. Layering, budding, grafting and layering can also be successfully applied. Plants propagated by air or ground layering show better growth and flowering. Shoe flower is seriously infected by insects like, mites and red spider causing curling of leaves, which stops further growth and flowering.

#### PHYTO- CONSTITUENTS

Leaves and stems contain  $\beta$ -sitosterol, stigma sterol, taraxeryl acetate and three cyclopropane compounds and their derivatives.

Flowers contain cyanidindiglucoside, flavonoids and vitamins, thiamine, riboflavin, niacin and ascorbic acid

Petals of Hibiscus rosasinensis have quercetin-3di-0-beta-D-glucoside, quercetin-3-7-di-0-beta-D-glucoside, quercetin-3-0-beta-D-sophorotrioxide, kaempferol-3-0-beta-D-xylosyl-glucoside, cholesterol, campesterol,  $\beta$ -sitosterol, catalase.

#### TRADE AND COMMERCE

Retail market price – dried flowers – Rs. 50/- per kg (2001)

Amazon online – Dried flower -150/- 100gm  
Powder - 180/- 100gm

The dried powder is used as shoe shine or polish hence its called as shoe flower.

Many of herbal tea powder contains hibiscus dry flower powder.

#### Economic Importance

- Economically this family is of much importance because there are a number of fibre yielding plants. According to certain authorities nearly all genera can produce some or other kinds of fibres.
- A dye is made from petals
- Plants are often used for hedges and screens
- The juice of petals is used in china as shoe-blackening and mascaras.

#### Substitutes and Adulterants

- The drug powder is adulterated with *H. schizopetalus* Hook.f., *H. mutabilis* Linn. And *Malvaviscus mollis* DC. The genuine drug can be distinguished on the basis of various types of trichomes.
- Young leaves are sometimes used as a spinach substitute

**Part Used:** Flowers, leaves and root

**Dose:** powder 5 to 10gm.

#### PARYAYA PADA<sup>2,3</sup>

**Table No.1: Synonyms of Japa**

S.No	Synonyms	B.N	R.N	S.N	N.R	K.N	R.M	C.D	N.A
1	<u>Arkapriya</u>		+						
2	<u>Aruna</u>	+				+			
3	<u>Trisandhya</u>	+				+			+
4	<u>Pratika</u>								
5	<u>Raktapushpi</u>		+						
6	<u>Ondrapushpa</u>	+				+			+
7	<u>Odraka</u>		+						
8	<u>Java-japa</u>	+	+			+			+
9	<u>Japapushpa</u>				+	+			
10	<u>Pindapushpa</u>					+			
11	<u>Javapushpa</u>					+		+	
12	<u>Harivallabha</u>		+						
13	<u>Hemapushpa</u>					+			
14	<u>Japakusuma</u>						+		
15	<u>Adhul</u>								+
16	<u>Gudhal</u>								+

**VERNACULAR NAMES**<sup>33-35</sup>

**Table No.2: Vernacular names**

1	Hindi	Jasut, Jasum, Java, Gurhal, Arahul
2	Kannada	Dasavala
3	Tamil	Sambathoo chedi
4	Telugu	Java pushpamu
5	Malayalam	Chemparattip-puva
6	Oriya	Mondaro
7	Assamese	Joba
8	Marathi	Jasavanda
9	Gujrathi	Jasunt
10	Bengali	Juva, Joba, Jiwa, Jaba
11	Punjabi	Jasum, Jaipushpa
12	English	Shoe Flower plant, Chinese hibiscus
13	Arabic	Anghara
14	Pharsi	Angara

**YOGAS**

**Table No.3: Yogas of japa**

S.No	Preparations	Reference
1	<u>Chemparuthyadi keratailam</u>	Sahasrayogam
2	Vidangadi yoga	-
3	Madhukadyavaleha	-
4	Patrangasava	-
5	Japa taila	-

**TAXONOMY**

**Table No.4: Taxonomical position of hibiscus rosasinensis**

S.No	Botanical Name	Hibiscus rosa-sinensis L.
1	Kingdom	Plantae
2	Subkingdom	Tracheobionta
3	Super division	Spermatophyta
4	Division	Magnoliophyta
5	Class	Magnoliopsida
6	Subclass	Dilleniidae
7	Order	Malvales
8	Family	Malvaceae
9	Genus	Hibiscus
10	Species	Hibiscus rosa-sinensis

**IDENTITY, PURITY AND STRENGTH**

**Table No.5: Identity, purity and strength of japa**

1	Foreign organic matter	not more than 1.5 per cent
2	Total Ash	not more than 13.5 per cent
3	Acid insoluble ash	not more than 0.5 per cent
4	Ethanol soluble extractive	not less than 12.0 per cent
5	Water-soluble extractive	not less than 30.0 per cent

## DISCUSSION AND CONCLUSION

Japa (*hibiscus rosa-sinensis*) is found throughout India and is cultivated as a ornamental plant and its description can be traced since vedic period. Classical texts of Ayurveda except smhitas describes it. Japa possess pharmacological properties like katutikta and madhurarasa, katuvipaka and sheetavirya; and useful to combat various disease conditions such as prameha, jwara, indralupta etc. and acts as a garbhanirodhaka.

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## CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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