Phytochemical Analysis Of *Japa Root* (*Hibiscus Rosa-Sinensis* L.)

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ABSTRACT:
Hibiscus word is derived from Greed word "hibiskos" meaning white or marshmallow. *Dravya guna* has not evolved spontaneously, years of observations extensive practical experiences has consolidated & enriched its principle and utility, due to this only it has long regime in the changing scenario of medical world and it still regime supreme. When promoting Ayurvedic medications, business-minded individuals blend counterfeit and adulterated medications with the actual medication, making it challenging to distinguish the original medication. With the aid of such adulteration and substitution, parameters for standardization and certification of medicinal plants can be avoided. The majority of pharmacognosy research has focused on confirming the identity of frequently used traditional medicinal plants by morphological, Phytochemical, and physicochemical study and identifying contentious plant species. The importance of pharmacognosy has been widely felt in recent times. Pharmacognostic studies ensure plant identity, lays down standardization parameters which will benefit and prevents adulterations. *Hibiscus Rosa sinensis* Linn. is certain to emerge in the near future as a major player in the growing field of herbal health supplements and medicines. This work compile all the information related to Hibiscus rosa sinensis Linn root part.

Index Terms: Hibiscus Rosa Sinensis, Physicochemical, Adulteration, Standardization.

INTRODUCTION:

Dravya vigyan is fundamental inseparable branch of *Ayurveda* which deals with study of plant drugs, properties, action, dose, and time of administration & various preparations of these drugs. Recognizing the importance of *Dravyaguna*, *Shri Narhari* gave prime position to *Dravya guna* in *Asthang Ayurveda* in his *nighantu*. In the olden days, the prevailing system of description of a medicinal plant was through various synonyms which are indicative of its physical characters, properties, actions, habitat, therapeutic uses, specific natural characteristic, etc. So the knowledge of synonyms of herbs has much importance in *Dravyaguna Vigyana*. *Dravya guna* has not evolved spontaneously, years of observations extensive practical experiences has consolidated & enriched its principle and utility, due to this only it has long regime in the changing scenario of medical world and it still regime supreme. *Hibiscus rosa-sinensis* is probably originated from India. Many claims that *Hibiscus rosasinensis* is a collection of artificial hybrids and is not a natural herb. Hibiscus word is derived from Greed word "hibiskos" meaning white or marshmallow.

In *Ayurveda* the description regarding the plants are available in the Classical texts and *Nighantu Granthas*; wherein various synonyms are given to each plant while describing it. In this pattern many drugs are available under one name and the same name has been given to several drugs. So, while going through the *Ayurvedic* texts no one can properly understand as to which exact drug should be taken. While marketing *Ayurvedic* drugs, the business minded people mix spurious and adulterant drugs in the original drug which makes it difficult to identify the original drug. Parameters for standardization and authentication of medicinal plants with the help of such adulteration and substitution can be prevented. Most of the research in pharmacognosy has been done in identifying controversial species of plants, authentication of commonly used traditional medicinal plants through morphological, Phytochemical and physicochemical analysis. The importance of pharmacognosy has been widely felt in recent times. Pharmacognostical studies ensure plant identity, lays down standardization parameters which will benefit and prevents adulterations. *Hibiscus Rosa sinensis* Linn. is certain to emerge in the near future as a major player in the growing field of herbal health supplements and medicines. This thesis work compile all the information related to *Hibiscus rosa sinensis* Linn root part.

METHODOLOGY :

Brief Over View of the Process of Standardization:
1. The plant drug materials can be evaluated or identified by seven methods:
• Organoleptic evaluation or morphological evaluation
• Microscopic evaluation
• Physical & Proximate values evaluation
• Chemical evaluation
• Chromatography and chemical fingerprints of herbal medicines
• Biological evaluation

• Radioimmunoassay
The Pharmacognostical standardization parameters which are generally done are described below.

Need of the Study:
We should look for a plant since mother earth is abundant with resources and she reveals her mysteries to us because we are true believers in her. Man has been forced to take another look at nature as he searches for new sources of food, medicine, and other life-supporting species. The majority of plant treatments are frequently used empirically by the populace. Researchers at *Dravyaguna* are as as mystified about these age-old traditional remedies as they are unexplored. Scholars should take lessons from shepherds and forest inhabitants, according to *Acharya*. As a result, *Dravyaguna* researchers haven't addressed the majority of time-tested folklore medicines, which might offer a solution for their approval in *Ayurvedic* Pharmacopeias based on sound fundamentals.

AIMS AND OBJECTIVES:
(1) To identity the drug from authentic sources.
(2) Organoleptic and Microscopic study of the root of drug.
(3) To analyze the drug Phytochemical.

REVIEW OF LITERATURE[1]:
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 Vaidyarachikitsa Amahiti dravyakosha* in *Karnataka* and *sarvaroga chikitsaratnam* in *kerala* and few other books like flora of *shimoga* etc.

Synonyms meaning: [2]
Hema Pushpa - Yellow Reddish Flowers
Trisandhya - Flowers last for 3 evenings
Hari Vallabha - Liked By God *Vishnu*
Rakta Pushpa - Red flowers

Table no. 1: Ayurvedic Properties:[3]

RASA	*GUNA*	*VEERYA*	*VIPAKA*	*PRABHAVA*	*DOSHGHNTA*
Kasaya, Madhura	*Laghu, Snigdha*	*Sheeta*	*Katu*	*Garbha Nirodhak*	*Kaphapittasamaka*

Table No.2: Synonyms of Japa

Synonyms	**B.N**[4]	**S.N.**[5]	**R.N**[6]	**K.N**[7]	**N.A**[8]
Adhul					+
Arkapriya			+		
Aruna	+	+		+	
Gudhal					+
Harivallabha			+		
Hemapushpa		+		+	
Japakusuma					
Japapushpa		+		+	
Java-japa	+	+	+	+	+
Javapushpa		+		+	
Odraka			+		
Ondrapushpa	+	+		+	+
Pindapushpa		+		+	
Pratika					
Raktapushpi			+		
Trisandhya	+	+		+	+

Table No.3: Vernacular names[9]

Arabic	*Anghara*
Assamese	*Joba*
Bengali	*Juva,Joba,Jiwa,Jaba*
English	*Shoe Flower plant,Chinese hibiscus*
Gujrathi	*Jasunt*
Hindi	*Jasut,Jasum,Java,Gurhal,Arahul*
Kannada	*Dasavala*
Malayalam	*Chemparattip-puva*
Marathi	*Jasavanda*
Oriya	*Mondaro*
Pharsi	*Angara*
Punjabi	*Jasum, Jaipushpa*
Tamil	*Sambathoo chedi*
Telugu	*Java pushpamu*

Taxonomical Classification [10]

Kingdom: Plantae - Plants
Subkingdom: Tracheobionta - Vascular plants
Superdivision: Spermatophyta - Seed plants
Division: Magnoliophyta - Flowering plants
Class: Magnoliopsida - Dicotyledons
Family: Malvaceae
Genus: Hibiscus
Species: *Hibiscus rosa-sinensis*

HABIT AND HABITAT[11]

Habit: shrub

Habitat: Hibiscus rosasinensis are native to Tropical Asia. A native of south eastern Asia (China), theplant is commonly found throughout the tropics and as a house plant throughout the world.Most ornamental varieties are hybrids. The present wide range of cultivars is considered to bea complex of inter specific hybrids, between 8 or more different species originating from theAfrican East Coast and islands in the Indian and Pacific Ocean.

Endemic Distribution in India

Throughout Assam

RED LIST CATEGORY & CRITERIA:
Rosa sinensis is distributed throughout the tropics and subtropics of the world. There are no major threats to this plant and therefore it is categorized as Least Concern.
Conservation Actions: This species is easily cultivated.

MAJOR CHEMICAL CONSTITUENTS:[12]
Some of the major chemical constituents of Hibiscus rosa sinensis are Cholesterol, Compestrol, Stigmasterol, Glucose, Fructose, Flavanoids, Hibiscetin, Cyanin, Glycosides, Alkanes, etc.

THERAPEUTIC INDICATIONS:[13]
Raktastambhana-Sonitasthapana **Coagulant,** *Sangrähi* **Antidiarrhoeal,** *Soumanasyajanana*-**Coolant**, *Mastiskabalyahara* **Antistress**, *Hridaya* **Pleasant**, *Vrashya* **Aphrodisiac**, *Mutrajanana* **Diuretic,***Jvara* **Fever,** *Kesya* **Hair Treatment**, *Garbhanirodhaka* **Contraceptive**, *Artavajanana* **Oligomenorrhea,** *Dahaprasamana* **Coolant**, *Khalitya-Palitya-Keśavikára* **Graying Of Hairs**, *Siroroga* **Headache**, *Mastişkadourbalya* **Low IQ** , *Unmada* **Psychological Disorders**, *Raktätisara* **Bleeding Diarrhea**, *Raktapitta* **Innate Haemorrhage**, Sukradourbalya, Püyameha *Prameha* **Urinary Disorder**, *Pradara-Asrgadara* **Menorrhagia** , *Jvara* **Fever**, *Rajahkṛchra* Dysmenorrheal.

SIDE EFFECTS AND TOXICITY [14]
All of the *Hibiscus rosa-sinensis* extracts administered to mice did not cause toxicity up to dosage levels of 500 mg/kg, indicating the safety of *Hibiscus rosa-sinensis* extracts.

PHARMACOGNOSTICAL STUDY AND ANALYSIS
Because they are seen as natural medicines and are always assumed to be safe, there is a resurgence of interest in pharmaceuticals with a natural origin nowadays. The occurrences of the dangerous nature of synthetic pharmaceuticals, which are seen as damaging to humans and the environment, are another aspect that stresses this concern. Natural medicines have the benefits of being readily available, affordable, and having few or no adverse effects; however, this is offset by the fact that they are frequently contaminated. The likelihood of a natural medication not being available rises with its effectiveness. The biological medication is easily falsified with poor quality ingredients to satisfy the rising demand. Adulteration or substitution simply refers to swapping out the original plant material with a different plant material or purposefully introducing a foreign ingredient to raise the weight, potency, or expense of the product. The quality and amount of chemical components of medicinal plants determine their therapeutic effectiveness.

MATERIAL & METHODS
PLAN OF STUDY:
- Collection of samples.
- Materials and methods.
- Macroscopic characters.
- Microscopic characters.

COLLECTION AND AUTHENTIFICATION OF PLANT MATERIAL:
For the pharmacognostical study the *Japa* (*Hibiscus rosa-sinensis* L. *)* plant is collected from Herbal garden and some plants cultivated in *Babe ke ayurvedic medical college, Daudhar, Mogha* periphery. The authencity of the trial drugs is already confirmed by Guide and Co- Guide.

MACROSCOPIC STUDY:
The collected samples of *Japa* studied organoleptically, with naked eye & magnifying lens, with the help of Pharmacognostical procedure i.e. Appearance, size, shape, colour, and odour and findings were recorded.

Organoleptic characters (*Hibiscus rosa-sinensis* L.) of Root of *Hibiscus rosa sinesis* :
- Colour : Yellow
- Odour: Sweet
- Taste: Mucilaginous sweet.

ANALYTICAL STUDY
Name of the sample: Hibiscus rosa-sinensis root, Sample quantity 50 gm, sample color: Light brown colored long roots
Proximate analysis of powdered plant material of *Hibiscus rosa-sinensis* was carried out using reported methods.

Table no. 4 ANALYTICAL DATA OF ALL SAMPLES

S.N	PARAMETERS	Result obtained ref.API Methods value % w/w
1	Loss of drying	0.53%
2	Total Ash value	7.79%
3	Acid insoluble Ash	6.39%
4	Water soluble extractive	5.30%
5	Alcohol soluble extractive	2.62%
6	Sulphated ash	5.52%

PHYTOCHEMICAL SCREENING

Table no 5 PHYTOCHEMICAL RESULTS OF JAPA ROOT

Where

Qualitative Phytochemical Test	Powdered Drug	Aq. E
Carbohydrate Test (Fehling solution)	+	+
Glycoside (Borntrager's Test)	+	+
Protein Test (Biuret Test)	+	+
Tannin Test (Ferric chloride Test)	_	_
Phenolic Compound test	+	+
Alkaloids test (Mayer Reagent)	_	_
Starch (Iodine Test)	+	+
Flavonoid test	+	+
Steroid test	_	_
Terpenoids Test	+	+
Saponins Test	+	+

Aq.E.-Aqous Extract. Al.E.-Alkoholic Extract, P.E.E- Petroleum Ether Extract.
Guide for ASU drugs, CCRAS, 2010.

Table 6: Phytochemical screening of *Hibiscus rosasinensis* L root powdered drug and water extract

Chemical constituents	Tests	Powdered Drug	water extract
1. Alkaloids	Wagner test	Absent	Absent
	Hager test	Absent	Absent
	Dragendorff`s test	Absent	Absent
2. Carbohydrates	Fehling`s test	Present	Present
	Barfoed`s test	Present	Present
	Molisch test	Present	Present
3. Triterpenoids	Salkowski test	Present	Present
	Liebermann test	Present	Present
4. Coumarins	10% NAOH	Present	Present
5. Steroids	Liebermann test	Absent	Absent
6. Tannins	5% $Fecl_3$	Absent	Absent
7. Saponins	Water	Present	Present
8. Flavones	Schinoda test	Present	Present
9. Chalcones	Conc. HNO_3& H_2SO_4	Present	Present
	Acetic acid & conc. H_2SO_4	Absent	Absent
10. Amino acids	Ninhydrin	Absent	Absent
11. Glycosides	Keller kiliani test	Present	Present
	Anthraquinone test	Present	Present

12. Proteins	Biuret test	Present	Present
	Million`s test	Present	Present
	Xanthoprotein test	Present	Present
13. Phenols	10% $Fecl_3$	Present	Present
	Dil. HNO_3	Present	Present

CONCLUSION:

In light of a literature review The Malvaceae family of plants includes *Hibiscus rosasinensis*, whose blooms and leaves have long been utilized for anti-diabetic and cosmetic purposes. The *Hibiscus rosasinensis* L. root powder and sections macro and microscopic characteristics, as well as their physicochemical and fluorescence characteristics, are utilized to develop the Pharmacognostical standards and qualitative parameters in accordance with pharmacopoeia and WHO recommendations. As a consequence of the results being compared to the provided standards as per API, it was determined that the samples provided were original. The study serves as an example for characterising and diagnosing the root of *Hibiscus rosa-sinensis,* Linn. This will aid in determining the original plant. The results of given Study like preliminary phytochemical screening can act as biomarkers for identification and authentification of raw herb and play an important role in quality control and prevention of adulteration in future.

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