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(RESEARCH ARTICLE)

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Determination of specific gravity and density tests of sariva (*Hemidesmus indicus* R.Br. Asclepidaceae /Apocynacae)

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Abstract

Hemidesmus indicus plant found in South Asia. It occurs over the greater part of India, from the upper gangetic plain eastwards to Assam and in some places in central, western and South India. It is also known as called *Ananthamoola*, also known locally in Southern India as *naruneendi* or *nannari*. It act as *Stanya Shodhana* and potent blood purifier. Both types of *Sariva (Hemidesmus indicus)* are *Swadu* (Sweet), *Snigdha* (Demulcent), *Shukrakara* (Promotes semen), *Guru* (Heavy), It cures *Agnimandya* (Indigestion), *Aruchi* (Distate), *Shwasa* (Dypsnoea), *Kasa* (Cough), *Visha* (Poisonous effects). Suppress the aggravated *Tridoshas*, *Pradara* (Menorrhagia), *Jwara* (Fever), and *Atisara* (Diarrhoea). The present work is dealt with assessment and understanding the relation between *Parthivatwa* on the basis of parametric tests like bulk density and specific gravity and the knowledge of specific gravity is needed in calculation of *Sariva* properties like void ratio, degree of saturation etc. Specific gravity **G** is defined as the ratio of the weight of an equal volume of distilled water at that temperature both weights taken in air whereas the Density is calculated by mass per volume. Weigh the *Sariva* sample and carefully transfer in to the measuring cylinder and measure the volume.

Keywords: *Sariva; Hemidesmus indicus;* Bulk density; Specific gravity; *Parthivatwa* etc

1. Introduction

Sariva[1] is *Madhura, Tikta* in *Rasas, Guru Snigdha Gunas, Sheeta Virya, Madhura Vipaka* It acts as *Rakta Shodhaka, Stanya Shodhaka.* The drug is categorized by various classical texts viz; *Charaka Samhita*[2]- *Jwarahara, Daha Prashamana, Purisha Sangrahaniya, Stanya Shodhana, Madhura Skanadha. Sushruta Samhita*[3]- *Sarivadi, Vidarigandhadi, Valli Panchamula. Astanga Hridaya*[4]- *Sarivadi Gana. Dhanwantari Nighantu*[5]- *Guduchadi Varga. Raja Nighantu*[6]- *Chandanadi Varga. Kaiyadeva Nighantu*[7]- *Oshadhi Varga. Madanapala Nighantu*[8]- *Abhayadi Varga. Bhavaprakasha Nighantu*[9]- *Guduchadi Varga. Priya Nighantu*[10]- *Pippalyadi Varga*

2. Types of Sariva[11]-

Shweta Sariva*(Hemidesmus indicus)*

Krishna Sariva*(Cryptolepis buchanani / Icnocarpus frutescens)*

2.1. Morphology[12]-

Sariva- Is perennial prostrate twinning shrub. Root stock is woody.

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- **Stem-** Slender, terete, glabrous or pubescent, striate, thickened at the nodes.
- **Leaves**- Simple, oppostite, variable, ellitic oblong to linear lanceoate, glabrous, dark green, often variegated with white above, and pale, pubescent beneath with reticulate venations.
- **Inflorescence**- Sub sessile cyme.
- **Flower**- Pedicel short and clothed with numerous bracts.
- **Fruit** is cylindric, tapering, at apex, slightly curved and glabrous.
- **Seeds** are 6-8 mm long, ovate oblong, flattened, black.
- **Part Used**- Root
- **Chemical constituents[13],[14]-**

The roots of Hemidesmus indicus contain hexatriacontane, lupeol, its octacosanoate, α-amyrin, β-amyrin, its acetate and sitosterol. It also contains new coumarino- lignoid-hemidesminine, hemidesmin I and hemidesmin II50, six pentacyclic triterpenes including two oleanenes, and three ursenes. The stem contains calogenin,acetylcalogenin-3-0-β-D-digitoxopyrannosyl-0-β-D-digitoxopyronsyl-0-β-D-digitoxopyranoside. It also afforded 3-keto-lup-12-en-21 28-olide along with lupanone, lupeol-3-β-acetate, hexadecanoic acid, 4-methoxy-3-methoxybenzalaldehyde, 3-methoxy-4-5methoxybenzalaldehyd glycosides-indicine and hemidine. The leaves contain tannins, flavonoids, hyperoside, rutin and coumarino. Leucoderma lignoids such as hemidesminine, hemidesmin I and hemidesmin II are rare group of naturally occurring compounds present in leaves.

Aims and objective

- To determine the specific gravity and bulk density of *Sariva*(*Hemidesmus indicus*)
- To assessment and understanding the relation between *Parthivatwa* on the basis of parametric test of specific gravity and bulk density of *Sariva* properties like void space or void ratio, degree of saturation etc.

3. Materials and methods

Density bottle of 50 ml with stopper having capillary hole, Balance to weigh the materials (accuracy 1gm), Wash bottle with distilled water, Alcohol and ether, Measuring cylinder, Spatula, China dish or Petri dish.

4. Results and observations

Table 1 Results and Observations

S. No.	Results and Observations	1	2	3
1	Weight of density bottle (W_1 g)	14	14	14
2	Weight of density bottle + dry powder *Sariva*(W_2 g)	15	15	15
3	Weight of bottle + dry powder *Sariva* + water at temperature (W_3 g)	72	72	72
4	Weight of bottle + water (W_4 g) at room temperature.	71.92	71.92	71.92
	Specific gravity G at room temperature	1.08	1.08	1.08

4.1. Determination of Specific Gravity of *Sariva(Hemidesmus indicus)*

Density of water at 27^0C / Weight of water of equal volume

= (W2-W1) / (W4-W1)-(W3-W2)

= (15 -14) / (71.92 - 14) - (72 - 15)

= 1 / (57.92 - 57)

= 1 / 0.92

= 1.086

4.2. Determination of Density(Bulk and True) of *Sariva(Hemidesmus indicus)*

Density is calculated by using Mass and Volume. ie Mass is divided by volume to get density. The Mass is weight of the sample and Volume is the measurement of filled sample in the measuring cylinder. The available reading is known as bulk density. The bulk density is presence of void space. The filled measuring cylinder with sample is tapped till the constant reading is available. This is known as true density. The true density is absence of void space.

4.3. Bulk Density = Mass / Volume

BD = 25 grms / 78= 0.5 gram/ml

4.4. True Density = Mass / Tapped volume

TD = 25 gms / 53= 0.47 gms/ml

5. Discussion

Clean and dry the density bottle. Wash the bottle with water and allow it to drain. Again wash it with alcohol and drain it to remove water. Then wash it with ether, to remove alcohol and drain ether. Weigh the empty bottle with stopper . This is known as (W_1). Take about 1gm of oven powder *Sariva* sample which is cooled in a desiccator. Transfer it to the bottle. Find the weight of the bottle and soil. The obtained weight is termed as (W_2). Put 10ml of distilled water in the bottle to allow the *Sariva* sample to soak completely. Leave it for about 2 hours. Again fill the bottle completely with distilled water put the stopper and keep the bottle under constant temperature water bath. Take the bottle outside and wipe it clean and dry note. Now determine the weight of the bottle and the contents . Then the obtained weight was known as (W_3). Now empty the bottle and thoroughly clean it. Fill the bottle with only distilled water and weigh it. Let it be at temperature. The obtained weight was known as (W_4). Repeat the same process for 2 to 3 times, to take the average reading of it. The obtained results were calculated as per equation stated below. The Bulk Density is calculated by mass per volume. Weigh the *Sariva* sample and carefully transfer in to the measuring cylinder and measure the volume.

6. Conclusion

The present work is dealt with assessment and understanding the relation between *Parthivatwa* on the basis of parametric tests like specific gravity and bulk density and the knowledge of these tests are needed in calculation of *Sariva's* properties like void ratio, degree of saturation etc. As per classical texts *Sariva is Swadu*(Sweet), *Snigdha*(Demulcent), *Shukrakara*(Promotes semen), *Guru*(Heavy), The above results supported the heaviness due to *Parthiva* protoelement present in that.

Compliance with ethical standards

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