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# A pharmaceutical standardization of *Shunthi* (*Zingiber officinale*): A Research Article

**Ajay Kumar Singh[1], Sanjiv Kumar[2], Sampurna Nand Tiwari[3]**

[1]*Post Graduate Scholar, Dept. of Dravyaguna, Govt. Ayurvedic College Patna, Aryabhatta Knowledge University Patna, Bihar, India.*

[2]*Post Graduate Scholar, Dept. of Ayurved Samhita and Siddhant, Govt. Ayurvedic College Patna, Aryabhatta Knowledge University Patna, Bihar, India.*

[3]*Principal & Professor, Govt. Ayurvedic College, Patna, Aryabhatta Knowledge University Patna, Bihar, India.*

## ABSTRACT

**Introduction:** *Shunthi (Zingiber officinale)* is a dried form of *Adaraka. Adaraka* means *Aadryati Jihva* i.e., which keeps the *Jihva* moistened by increasing salivation in mouth whereas *Shunthi* dries up the water content of *Kapha* and checks its flow. Its rich history of use for centuries, is owing to its composite therapeutic properties. **Aims and Objectives:** The present study is aimed to standardization of *Shunthi*. **Materials and Methods:** Preparation of *Shunthi Churna* from its *Kanda* (Rhizome). This article focuses on the pharmaceutical preparation and standardization of *Shunthi* to ensure consistent quality and potency in herbal formulations. Standardization involves the quantification of key bioactive compounds such as alkaloids, carbohydrates, steroids, tannins and starch, which contribute to its therapeutic effects. For the identification, purity and strength these must be fulfilled - analytical parameters like loss on drying at 110°C, total ash value, acid insoluble ash, alcohol soluble extractive, water soluble extractive and moisture content in drug. **Conclusion:** *Shunthi Churna* is used for *Grahani, Pandu, Shwasa Roga, Arsha*, *Amvata, Rajyakshma, Shula, Anaha* etc. The rare side effects are increased bleeding tendency, rash, itching sensation and swelling of tongue, lips and throat. **Drug interaction**: *Shunthi* can interact with anti-inflammatory medications like Ibuprofen, Aspirin etc. and other drugs that affect bleeding tendency.[1] **Contraindication:** In Summer and autumn seasons, contraindications with *Pittaja Vyadhi.*[2] Hence the present work may be used for the quality assessment and standardization of *Shunthi (Zingiber officinale).*

**Key words:** *Shunthi, Standardization, Analytical Study, Microscopic Study.*

## INTRODUCTION

Ginger is scientifically known as *Zingiber officinale*. The word *Zingiber* is derived from a Sanskrit word denoting "horn-shaped," in reference to the protrusions on the rhizome. It is an aromatic herb with reduced stem and creeping rhizome. Rhizome is horizontal, buff coloured, laterally flat with many sympodial branches, aromatic and pungent. Historically, *Shunthi* has been used both as a food and a medicine since ancient times. *Shunthi* also called as *Mahaushadha,* bears the necessary ingredients for efficacious action. *Shunthi* has been used to treat a wide range of ailments including dyspepsia, diarrhoea, nausea, asthma, respiratory disorders, toothache, gingivitis and arthritis**.**

**Address for correspondence:**
**Dr. Ajay Kumar Singh**
Post Graduate Scholar, Dept. of Dravyaguna, Govt. Ayurvedic College Patna, Aryabhatta Knowledge University Patna, Bihar, India.
**E-mail:** dr.ajaysinghchapra@gmail.com

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## AIM AND OBJECTIVES

The present study is aimed to standardization of *Shunthi*.

## MATERIALS AND METHODS

Preparation of *Shunthi Churna* from its *Kanda* (Rhizome).

### Preparation of *Shunthi Churna*

At first, we soak the fully matured ginger rhizome in water and leave it overnight. After that kept it in sunlight for drying for 10 days. Again, we soaked the dried rhizome with slaked lime for 6 hours followed by

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sun drying. The process is repeated until the rhizome becomes uniformly white and moisture content comes at the level of 8-10%.

### Synonyms[3]

*Shunthi* is also known as *Avakchhatra, Ahichhatraka, Katugranthi, Katubhadra, Utkata, Shringavera, Ushana, Mahaushadha, Vishvabheshaja, Vishva, Adaraka, Adi* etc.

### Pharmacodynamics (Properties)[4]

| ***Rasapanchaka*** | ***Adraka* (wet form)** | ***Shunthi* (dried form)** |
|---|---|---|
| *Rasa* | *Katu* | *Katu* |
| *Guna* | *Guru, Ruksha, Tikshna* | *Laghu, Snigdha* |
| *Virya* | *Ushna* | *Ushna* |
| *Vipaka* | *Katu* | *Madhura* |
| *Doshakarma* | *Kaphavatashamak Pittavardhak* | *Kaphavatashamak Pittashamak* |

### Chemical constituents [5]

The Phenolic compounds in *Shunthi* are mainly Gingerols, Shogaols and Paradols. In *Ardraka*, Gingerols are the major Polyphenols, such as 6-Gingerol, 8-Gingerol and 10- Gingerol. Zingiberens, Zingiberol, Zingerone, Curcumene, Ginger glycolipids are found in it.

### Macroscopic Observation

Rhizome, laterally compressed, bearing short, flattish, ovate, oblique, branches on upper side each having at its apex a depressed scar, pieces about 5-15 cm long, 1.5-6.5 cm wide (usually 3-4 cm) and 1-1.5 cm thick, externally buff colored, showing longitudinal striations and occasional loose fibers, fracture short, smooth, transverse surface exhibiting narrow cortex (about one-third of radius), a well-marked endodermis and a wide stele showing numerous scattered fibro-vascular bundles and yellow secreting cells, odour agreeable and aromatic, taste, agreeable and pungent.

### Microscopic Observation

Transverse section of rhizome shows cortex of isodiametric thin-walled parenchyma with scattered vascular strands and numerous isodiametric idioblasts, about 40-80 µ in diameter, containing a yellowish to reddish-brown oleo-resin, endodermis slightly thick walled, free from starch, immediately inside endodermis a row of nearly continuous collateral bundles usually without fibers, stele of thin-walled parenchyma cells, arranged radially around numerous scattered, collateral vascular bundles, each consisting of a few unlignified, reticulate or spiral vessels up to about 70 µ in diameter, a group of phloem cells, unlignified, thin-walled, septate fibers up to about 30 µ wide and 600 µ long with small oblique slit like pits present, numerous scattered idioblasts, similar those of cortex, and associated with vascular bundles, also present, idioblasts about 8-20 µ wide and up to 130 µ long with dark reddish-brown contents: in single or in axial rows, adjacent to vessels, present, parenchyma of cortex and stele packed with flattened, rectangular, ovate, starch grains, mostly 5-15 µ - 30-60 µ long about 25 µ wide and 7 µ thick, marked by five transverse striations.

### Standardization of *Shunthi - Zingiber officinale.*[6]

### Physicochemical parameters

| SN | Test parameters | Result (in % w/w) |
|---|---|---|
| 1. | Loss on drying | 9.02 |
| 2. | Ash value | 4.32 |
| 3. | Acid insoluble ash | 0.77 |
| 4. | Water soluble extract | 10.85 |
| 5. | Alcohol soluble extract | 4.9 |
| 6. | pH (10% Aq. Solution) | 4.6 |

### Phytochemical parameters

| SN | Phytochemical compounds | Result |
|---|---|---|
| 1. | Alkaloids | + |
| 2. | Carbohydrates | + |
| 3. | Flavonoids | + |

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| | | |
|---|---|---|
| 4. | Saponins | + |
| 5. | Steroids | + |
| 6. | Tannins | + |
| 7. | Starch | + |
| 8. | Acid Test | - |

### High Performance Thin Layer Chromatography (HPTLC) Profile

[*Shunthi* (*Zingiber officinale*) *(Rhizome)]*

### Sample preparation

1gm. of the sample was subjected to reflux with Methanol, for 1 hour and extract was filtered using Whatmann-1, filter paper. The filtrate was concentrated and taken for the following HPTLC profile.

### Chromatography experimental

### Stationary Phase:

Precoated (support on Aluminum Sheets) Silica Gel Plate. Specification: TLC Silica Gel 60F254, Mfg. by Merck.

### Mobile Phase:

Hexane: Ethyl acetate: Methanol (7:3:1, v/v) [G R grade solvent used]

### Sample application:

Variable volumes applied as 4 µL and 5 µL in track 1 and track 2 respectively, as 8 mm band and at 15 mm from the base of the plate.

### Development:

Developed up to 80 mm in CAMAG Twin trough chamber, Plate preconditioning (temp 25°C and relative average humidity was 42%)

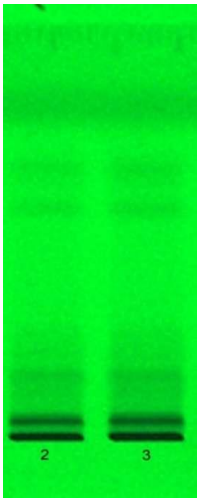
### Visualisation:

Images of the developed plate were captured under 254 nm, 366 nm UV light and at white light after derivatisation.

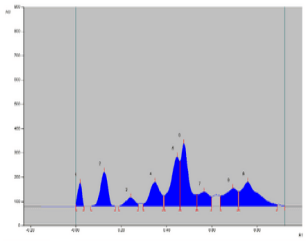
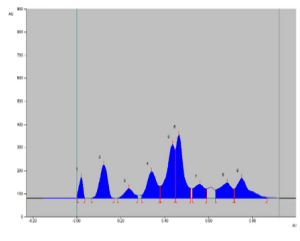
### Derivatisation:

Developed plate was dipped in 20% aq. sulphuric acid and charred at 105°C and visualized at white light.

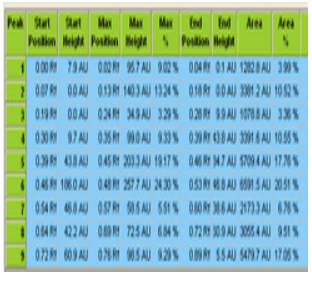
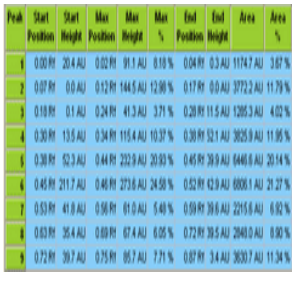
### Photography of HPTLC Plate

| 254 nm | 366 nm | White light after derivatisation |
|---|---|---|
|  |  |  |

### HPTLC fingerprint at 254 nm

| Track 1 | Track 2 |
|---|---|
|  |  |

**$R_f$ Values**

| Track 1 | Track 2 |
|---|---|
|  |  |

### a. Organoleptic study of Powder:

Colour: Creamish brown

Texture: Fine and smooth

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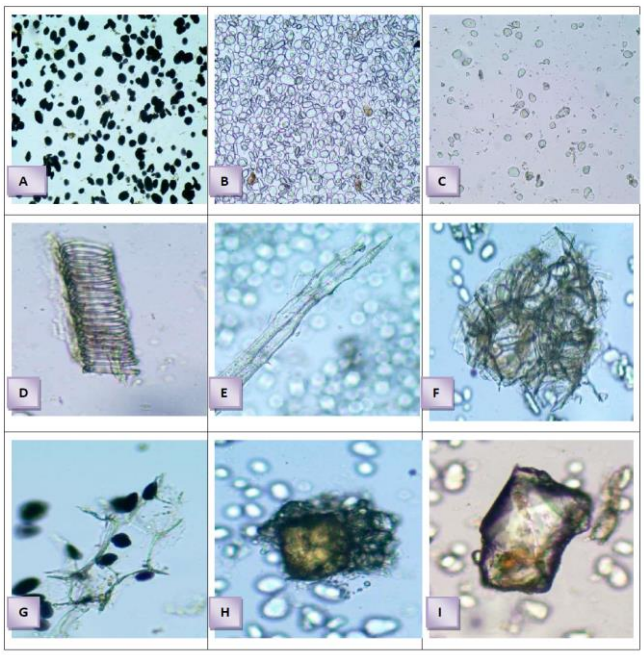
Odour: Not Characteristic

Taste: Bitter

**Fig. 1: Macroscopy of *Shunthi powder***

**b. Powder microscopy:** Powder shows presence of numerous round to oval shaped simple and compound starch grains, reticulate vessels, long septate fibers, parenchymatous cells with starch grains, Oleo resin masses and prismatic crystals.




**Powder microscopy of *Shunthi***

**A.,B.,C.** Simple and compound starch grains; **D.** Reticulate vessel; **E.** Septate fiber; **F.,G.** Parenchymatous cells with starch grains; **H.** Oleo resin; **I.** Prismatic crystals

**Part Used:** *Kanda* (Rhizome)

**Dose:** 1-2 gm.

## CONCLUSION

The physicochemical parameters of the samples were analyzed. It was found that some of the parameters were like loss of drying 9.02 % w/w, water soluble ext 10.85 % w/w, alcohol soluble ext 4.9 %w/w, PH 4.6 % w/w, Ash value 4.32 % w/w Whereas in Phytochemical parameters alkaloids, Flavonoids, Saponins, Steroids, Tannins, Starch present in *Shunthi Churna*. In Powder microscopic investigation, Powder shows presence of numerous rounds to oval shaped simple and compound starch grains, reticulate vessels, long septate fibers, parenchymatous cells with starch grains, Oleo resin masses and prismatic crystals. On the basis of these parameters, bioavailability of the drug will be increased and thus quick action is expected. It is the drug of choice in treatment of *Grahani, Pandu, Shwasa Roga, Arsha*, all types of *Jvara, Amvata, Rajyakshma, Shula, Hridroga, Anaha* etc. The rare side effects are increased bleeding tendency, rash, itching sensation and swelling of tongue, lips and throat. **Drug interaction:** *Shunthi* can interact with anti-inflammatory medications like ibuprofen, aspirin, warfarin, heparin and other drugs that affect bleeding tendency. **Contraindications:** In Summer and autumn seasons, diseases like Pandu, *Raktapitta, Mutrakrichha, Vrana, Jvara and Daha*, Pregnancy, Lactation, Abdominal bleeding.

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