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Detailed Pharmacognostical and Preliminary Pharmaceutical Assay of *Shunthi* Tablet

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Abstract

Health is an important issue today. Hazards from faulty lifestyle and excessive use of junk foods affect more people these days. This leads to more digestive problems in present era. *Shunthi* (*Zingiber officinalae* Rosc.) of Zingiberaceae family is a widely used herb in various *Ayurvedic* preparations like *Trikatu*, *Panchkola* etc. due to its effect on digestive and other systems. It is also used as flavouring agent, aromatic and taste making agent in Indian kitchen and as an Anti-Inflammatory, Hypolipidaemic, Antibacterial, Antifungal, Molluscicidal, Nonphytotoxic agent in pharmaceutical industries. Different dosage form mentioned in Ayurvedic classics for different drug to improve its efficacy, palatability and self-life. This study has been conducted to evaluate the role of *Shunthi* as *Deepana* and *Paachana* drug. The drug is going to use in the form of tablet and subjected to Pharmacognostical and physicochemical evaluation. The Pharmacognostical results showed that annular vessels, parenchyma cell with starch grain, oleoresin content. The physicochemical evaluation showed that Tablet Hardness 0.6 kg/cm^2, Loss in drying 7.15 %w/w, pH value 6.5, Ash value 8.38 % w/w.

Keywords

Pharmacognosy, Physicochemical analysis, Shunthi, Zingiber officinalae, Amajirna

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INTRODUCTION

Development is the prime motto in present era and psychosis for the development leads mankind to more ignorance toward their body. Due to this rapidly going lifestyle, physical and mental stress of work, people are not giving sufficient time and justice to their diet and lifestyle. This type of disturbance creates more chance of Gastro-intestinal complications. *Amajirna* is such a condition which occurs due to faulty diet pattern and lifestyle. So we need such drug which is very effective in such condition in term of availability and cost. *Shunthi Churna* is very popular herbal preparation, which is dried and processed rhizome of Ginger plant. Its name ***'Vishwabheshaja[1]'*** in Sanskrit explains its usefulness and wide range of its uses. *Shunthi* has *Dipana, Rochana, Vata-Shleshma Vibandha Prashamana*[2] properties and it is best among *Kanda*[3]. It is also mentioned in *Deepneeya Maha Kashaya*[4]. Traditional *Yoga* like *Trikatu*[5], *Panchakola*[6], and *Chitrakadi Vati*[7] contain *Shunthi*. These preparations are effective in *Ajirna* like conditions. Research proved Anti-inflammatory, Antioxidant, Antibacterial, Antifungal, Molluscicidal effect[8,9] of *Shunthi*. Ancient *Acharyas* have been described different type of *Kalpana* to improve the efficacy, palatability and self-life. To overlook the strong pungent taste of *Shunthi* this formulation i.e. Shunthi tablet is prepared to evaluate its efficacy in *Amajirna*.

***Ayurvedic* Pharmacology[10]**

Rasa (taste): *Katu*

Guna (quality): *Laghu,* Snigdha

Virya (action): *Ushna*

Vipaka: *Madhura*

Doshaghnata: *Vata Kapha Vibandhanut*

Karma: Deepana, Pachana, Vrishya, Amvataghni, Rochana

Snigdha Guna Ushna Virya and *Madhur Vipaka* gives *Vata Shamana* effect and as it is having *Katu Rasa, Laghu Guna* and *Ushna Virya*, it increase the *Agni* and also give *Kapha Shamana, Deepana, Pachana, Roc*hana and *Amahara* properties. Due to *Madhura Vipaka* (*Prithvi* and *Jala Mahabhoota*) and *Snigdha Guna* it nourishes all *Dhatus and Sukra Dhatu as* well and giving *Vrishya* effect.

MATERIALS AND METHODS

Drug Source:

A good quality rhizome of *Zingiber officinale* Rosc. was taken from the pharmacy of the institute.

Method of Preparation of *Shunthi* tablet:

Shunthi was taken in a grinder for pulverisation to reach a consistency of coarse powder form and then it was passed through a sieve-number 100. This powder was then converted into granules with the help of oleo gum resin for preparing tablets.

Pharmacognostical Evaluation:

Morphological, organoleptic and microscopic evaluation on *Shunthi* Tablet were conducted at Pharmacognostical laboratory of institute. The tablets were dissolved in small quantity of distilled water and studied with and without staining. Micro photographs of the slides were taken with Carl Zeiss microscope attached with camera[11,12].

Physico-chemical Evaluation:

The tablet were analysed by using standard qualitative and quantitative parameters at pharmaceutical laboratory of institute according to Ayurvedic Pharmacopeia of India (API)[13] and WHO monographs[14] of *Shunthi* tablet for identification, loss on drying, ash value, pH value, water soluble extract, alchohol soluble extract. HPTLC were also performed.

Method of Preparation of Methanolic extract:

A solution was prepared by mixing 2.5 gm of powder of *Shunthi* tablet and 50 ml of 70% methanol and the solution was kept in a clean and dry place for 24 hr with intermittent shaking. Then extract was collected and filtered through Whatman no. 1 filter paper. From the above solution, 20 ml was taken and heated on thermostatic water bath till a dark brownish residue was obtained which yielded 15% w/w.

HPTLC

Methanolic extract of *Shunthi* tablet was spotted on pre-coated silica gel GF 60254 aluminium plate by V sample applicator fitted with a 100 µl Hamilton syringe. Toluene (7ml) and ethyl acetate (2 ml) and acetic acid (1 ml) were used as the mobile phase. The resulting HPTLC pattern was viewed under short-wave ultraviolet light at 254 nm and long wave ultraviolet at 366 nm. (Plate. 3)

OBSERVATION AND RESULTS

Pharmacognostical Study

Organoleptic characters of *Shunthi* Tablet: The *Shunthi* tablet was smooth and fragile in texture, Dark creamish in colour, and had

strong aromatic odour which was pleasant and strong pungent taste. The result obtained are tabulated in table 1. Plate.1.

Table 1 Organoleptic characters of *Shunthi* Tablet

No.	Organoleptic parameter	Result
1	Texture	Smooth and fragile
2	Colour	Dark Creamish
3	Odour	Strong Aromatic
4	Taste	Strong pungent

Plate 1

1.Ginger Plant natural Habitat

2. Prepared Shunthi

3. Shunthi Tablet

***Shunthi* Tablet Microscopy:**

The characteristics observed under microscope were simple fibres, Simple Starch grains, Oil content, Crystalline matter, Scalariform vessels, Annular vessels, Parenchyma cell with starch grain, Oleoresin content, Iodine stained starch grain, Cork in tangential view. Plate.2. (Fig1-9)

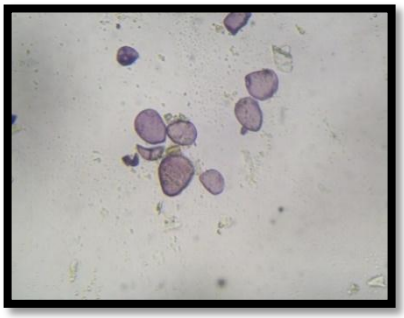
Pharmaceutical study:

The results of Physico-chemical parameter of *Shunthi* Tablet obtained are tabulated in table 2. Average weight of tablet is 508.8 mg, average tablet hardness is 0.6 kg/cm^2, Loss on drying is 7.15% etc. depicted in the Table no.2.

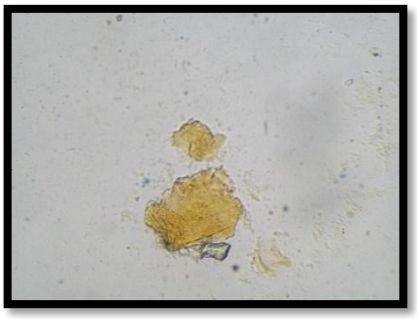
Table 2 Physico-chemical parameter of *Shunthi* Tablet

No.	Physico-chemical parameter	Result
1	Average weight of tablet	508.8 mg
2	Tablet Hardness	0.6 kg/cm^2
3	Loss in drying	7.15 %
4	Ash value	8.38 %
5	Water soluble extract	26.3 %
6	Methanol soluble extract	15 %
7	pH value	6.5

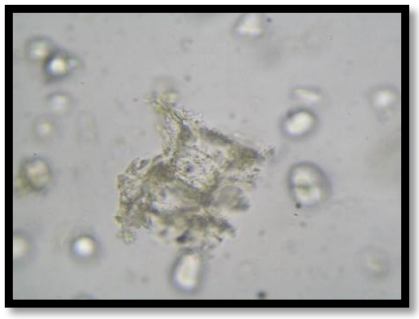
Plate 2



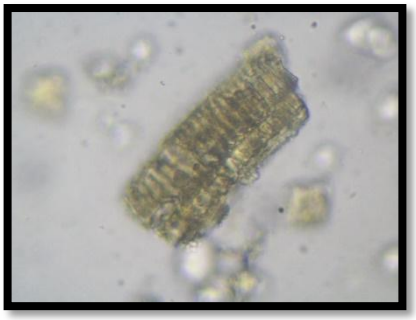
1. Iodine stained simple starch grain



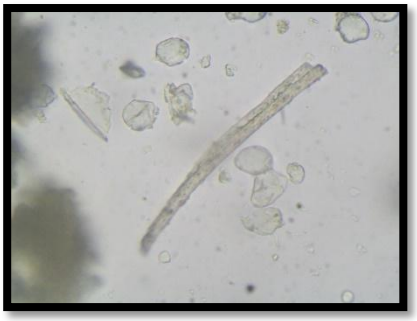
2. Oleo resin content



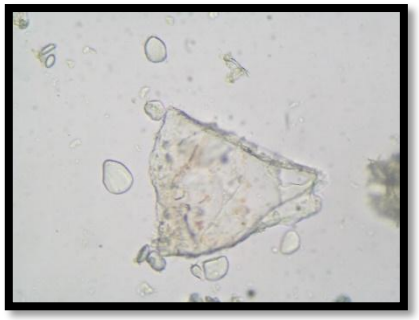
3. Parenchyma cell



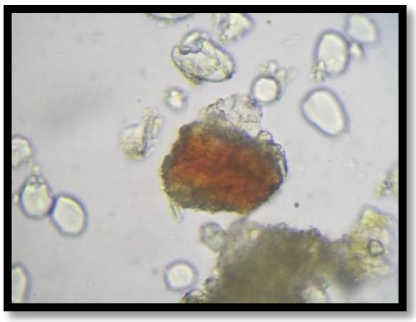
4. Sclariform vessels



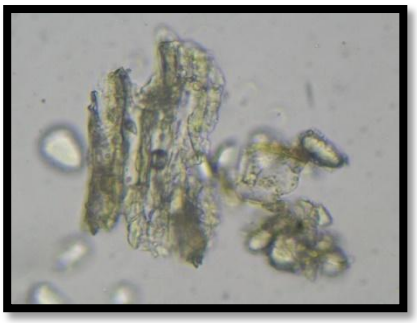
5. Simple fiber



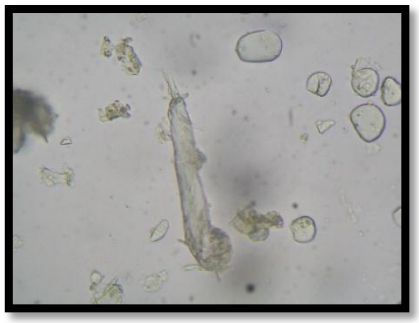
6. Silica deposition



7. Oleo resin content with starch grain

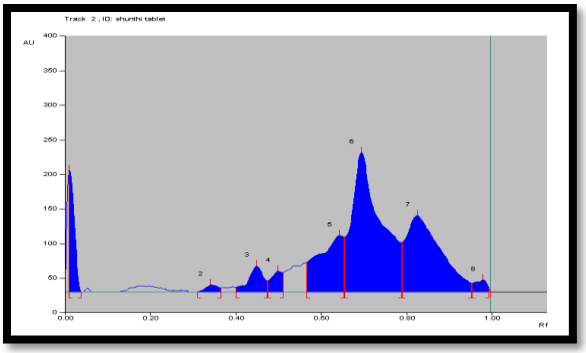


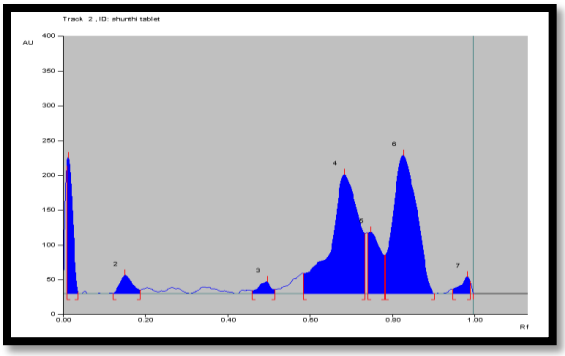
8. Cork cell



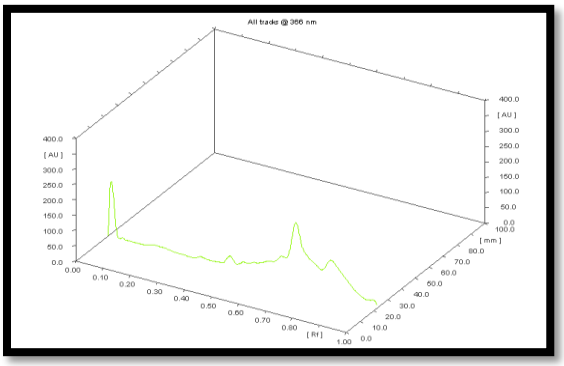
9. Fiber with starch grain

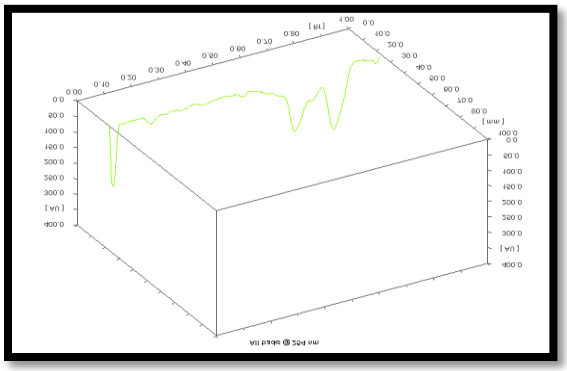
Plate 3 HPTLC of Tablet at 254 and 366nm





HPTLC 3-D graph of Tablet at 254 and 366nm





DISCUSSION

Due to the strong pungent test of *Shunthi*, oral intake is not so much convincing for the patient. For this study which is dealing with the Condition of *Amajirna*[15] new pharmaceutical preparation of *Shunthi* i.e. tablet is prepared. And it is very easy in term of palatability, cost effectiveness and less machinery usage. According to Ayurvedic Pharmacodynamics of *Shunthi*, It is having *Katu Rasa*, *Laghu Guna* and *Ushna Virya*. These are opposite from *Amajirna*, by this properties *Shunthi* increase *Agni* and do *Ama Pachana Karma*. This properties should not be change in tablet form.

As this single drug preparation is tried for first time, so the pharmaceutical and pharmacognostical analysis is required for the authenticity of drug. Pharmacognostical study of *Shunthi* tablet showed specific character of *Z.officinalae* Rosc Character found under microscopic analysis such as simple fibre, simple starch grain, cork in tangential view, oil content, crystalline matter, sclariform vessels, annular vessels, parenchyma cell, oleoresin content, iodine stained starch grain. (plate. 2)

Pharmaceutical analysis shows 6.5 pH value which is near to neutral. HPTLC shows two same band with 0.01 and 0.95 Rf value at 254 nm and 366 nm.

CONCLUSION

Pharmacognostical findings confirmed the ingredients of *Shunthi* tablet and that there is no major change in the microscopic structure of the drug during the pharmaceutical processes of preparation of tablet. Physico-chemical and HPTLC studies inferred that the formulation i.e. *Shunthi* Tablet meets the minimum quality standards as reported in the API at a preliminary level.

The inference from this study may be use as reference standard in the further quality control researches.

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