PHARMACOGNOSTICAL AND PHARMACEUTICAL EVALUATION OF SVAGUPTADI CHURNA

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ABSTRACT
Infertility is defined as the failure to achieve a pregnancy within one year of regular (at least three times per month) unprotected intercourse. Oligozoospermia i.e. sperm count less than 15 million/ml is one of the causes for infertility. Now a day’s oligozoospermia and infertility are common problems due to disturb daily routine, disturb food habits and mental stress on account of fast life. In classics, In Ayurvedic classics herbal and herbo-mineral fertility agents are explained in detail, role of Churna Ratnam and Svaguptadi Churna in powder form in treatment of Shukra Dosha is emphasized in Gadanigraha. The main aims and objectives of this study is to develop the pharmacognostical and phytochemical profile of Svaguptadi Churna. The pharmacognostical study reveals the presence of Brown Content of Vidari, Cork Cells of Vidari, Endosperm Cells of Kapikachhu, Epicarp Cells of Kapikachhu, Epidermal Cells of Krushna Til, Stone Cell of Krushna Til, Epidermal Cells of Shweta Jirak, Oil Globule of Krushna Jirak, Paranchyma Cell of Krushna Jirak, Pitteo Vesseles of Ashwagandha, Simple Starch Grains of Ashwagandha, Trichome along With Oil of Shveta, Globule of Shveta Jiraka. Pharmaceutical evaluation showed loss on drying 8.57% w/w, Ash Value 6.51 w/w, pH 5. HPTLC results showed that the 5 spots at 254 nm and 3 spots at 366 nm.

KEYWORDS: Svaguptadi Churna, pharmacognosy, pharmaceutical analysis, oligozoospermia.

INTRODUCTION
Ayurveda has described several drugs and special therapeutic procedures to treat the problem of infertility. In such a condition Vajikarana, one of ramification of Astanga Ayurveda, can come as savior in rescuing him from this problem Shukra kshaya (oligozoospermia) is a condition in Ayurveda in which there is deficiency in quality and quantity of shukra responsible for Infertility. Number of Vajikarana drugs has been mentioned in the Ayurvedic classics. In Ayurvedic classics herbal and herbo-mineral fertility agents are explained in detail, role of Svaguptadi Churna[1] in powder form in treatment of Shukra Dosha is emphasized in Gadanigraha. It is used as a Vajikarana drug and contained Vrishya properties.

Svaguptadi Churna is known drug for Shukra vaha Sroto Dushti, till date no work has been done to standardise the Svaguptadi Churna through pharmacognostical and Physico-chemical parameters, hence in the present study Svaguptadi Churna was subjected to pharmacognostical and pharmaceutical analysis.

AIMS AND OBJECTIVES
1. To establish the identifying characters and genuineness of the drugs under trial.
2. To study the macroscopic characters of raw drugs of the trial drug.
3. To examine the cyto architecture of the raw drugs of trial drug.

MATERIALS AND METHODS
Collection and authentication of raw drugs
All drugs were collected from the pharmacy of Gujarat Ayurved University, Jamnagar. The organoleptic and powder microscopy of drugs were carried out in Pharmacognosy Laboratory of I.P.G.T. & R.A. Drugs were confirmed to be authentic and of good-quality.

Preparation of Svaguptadi Churna
Svaguptadi Churna was prepared in the Pharmacy, GAU, Jamnagar. For this in the beginning, process for drying the fresh ingredients under indirect sunlight. After dried properly then fine powdered it. (Table No. 1).
Pharmacognostical Evaluation
As per API[3] raw drugs were identified and authenticated by the Pharmacognosy Laboratory. The identification was carried out based on the organoleptic features and powder microscopy of the individual drugs. Later, pharmacognostical evaluation of Svaguptadi Churna was carried out. Churna was dissolved in small quantity of distilled water, studied under the Carl Zeiss Trinocular microscope attached with camera, with stain and without stain. The microphotographs were also taken under the microscope.

Observation and Results
The initial purpose of the study was to confirm the authenticity of the drugs used in the preparation of Svaguptadi Churna. For that, coarse powder of drugs was subjected for organoleptic feature estimation.

Organoleptic Characters
Organoleptic characters of Churna Ratnam and Svaguptadi Churna is brownish in colour, slightly aerochromic odour with sweet astringent taste depicted in Table No.2.

Pharmacognostical Evaluation
Microscopical Characters of Svaguptadi Churna
Diagnostic characters of Svaguptadi Churna under the microscope are Brown Content of Vidari, Cork Cells of Vidari, Endosperm Cells of Kapikachhu, Epicarp Cells of Kapikachhu, Epidermal Cells of Krushna Til, Stone Cell of Krushna Til, Epidermal Cells of Shweta Jirak, Oil Globule of Krushna Jirak, Paranchyma Cell of Krushna Jirak, Pittette Vesicles of Ashwagandha, Simple Starch Grains of Ashwagandha, Trichome along With Oil of Shweta, Globule of Shweta Jiraka. (Plate No. 1, Fig. A)

Physicochemical evaluation
Svaguptadi Churna were analyzed using various standard physicochemical parameters such as Loss on drying,[3] PH,[4] water soluble extract, and methanol soluble extract,[5] as per API at the pharmacetical chemistry laboratory, IPGT&RA, Jamnagar.

HPTLC STUDY
High performance thin layer chromatography (HPTLC) is a sophisticated and automated form of TLC. H.P.T.L.C is quality assessment tool for the evaluation of botanical materials. It allows for the analysis of a broad number of compounds both efficiently and cost effectively. Additionally, numerous samples can be run in a single analysis thereby dramatically reducing analytical time. With HPTLC, the same analysis can be viewed using different wave-lengths of light thereby providing a more complete profile of the plant than is typically observed with more specific types of analyses.

The details of HPTLC done on alcoholic extract of Svaguptadi Churna are as follow:

Mobile phase
Toluene: Ethyl acetate: Acetic acid (7:2:1) v/v.

Chromatographic conditions
Application mode: CamagLinomat V.
Development Chamber: Camag Twin trough Chamber.
Plates: Precoated Silica Gel GF254 Plates.
Chamber Saturation: 30min.
Development Time: 30min.
Scanner: Camag Scanner III.
Detection: Deuterium lamp, Tungsten Lamp.
Data System: Win cats software.

Methanolic extract of finished product was spotted on pre-coated silica gel GF 60254 aluminum plate by means of Camag Linomat V sample applicator fitted with a 100μL Hamilton syringe. Toluene. Ethyl acetate: Acetic acid (7:2:1) was used as the mobile phase. After development, densitometric scan was performed with a Camag TLC scanner III in reflectance absorbance mode at UV detection as 254nm and 366nm under the control of Win CATS Software (V 1.2.1. Camag).[6]

Preliminary Physico Chemical Parameters
Preliminary Physico Chemical Parameters ie. Weight, hardness, loss on drying etc. were properly studied and results are depicted in the Table No.3.

HPTLC RESULTS
HPTLC Results of Svaguptadi Churna showed that 5 spots at 254nm and 3 spots at 366nm. Detailed results are depicted in the Table No. 3.11 and Table No. 4(Plate No.2).

RESULTS AND DISCUSSION
Microscopic structure of Svaguptadi churna showed Brown Content of Vidari, Cork Cells of Vidari, Endosperm Cells of Kapikachhu, Epicarp Cells of Kapikachhu, Epidermal Cells of Krushna Til, Stone Cell of Krushna Til, Epidermal Cells of Shweta Jirak, Oil Globule of Krushna Jirak, Paranchyma Cell of Krushna Jirak, Pittette Vesicles of Ashwagandha, Simple Starch Grains of Ashwagandha, Trichome along With Oil of Shweta, Globule of Shweta Jiraka presence of characters which was diagnostic characters of the raw drugs. Hence it was concluded that raw drugs of all the trial drugs were authentic and finished products were also of good quality Phytochemical analysis showed that material gains moisture storage, which eventually may affect the quality of product. Here, average value of drug of Loss on drying (LOD) were found within normal limits 8.57% w/w, which indicates prompt care taken during packaging and storage of product. The obtained values of these tests were found within normal limits in Svaguptadi Churna, which indicate good quality of product. The pH value of the compound was found to be 5.0 and the ash value constituted 6.51%. The water soluble extract was found to be 44.27% and methanol soluble extract was found 25.45%. HPTLC results of
Svaguptadi Churna showed that the 5 spots at 254 nm and 3 spots at 366nm.

Table No: 1 Svaguptadi Churna

<table>
<thead>
<tr>
<th>No</th>
<th>Drug</th>
<th>Latine Name</th>
<th>Part use</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Swagupta</td>
<td>Macuna Pruriens</td>
<td>Seeds</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Ashvagandha</td>
<td>Withania somnifera</td>
<td>Root</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Vidari</td>
<td>Pueraria Tuberosa</td>
<td>Tuber</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Swet jirak</td>
<td>Cuminum Cyminum</td>
<td>Fruit</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>krushna jirak</td>
<td>Carum carvi</td>
<td>Fruit</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Krushna Til</td>
<td>Sesamum indicum</td>
<td>Seeds</td>
<td>1</td>
</tr>
</tbody>
</table>

(Table No.2): Organoleptic characters of Svaguptadi Churna

<table>
<thead>
<tr>
<th>Characters</th>
<th>Svaguptadi Churna</th>
</tr>
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<tbody>
<tr>
<td>Colour</td>
<td>Greenish Brown</td>
</tr>
<tr>
<td>Odour</td>
<td>Slightly Aerometic</td>
</tr>
<tr>
<td>Taste</td>
<td>Sweet Astringent</td>
</tr>
<tr>
<td>Consistency</td>
<td>Fine Coarse powder</td>
</tr>
</tbody>
</table>

(Table No. 3): Preliminary Physico Chemical Parameters Swayamguptadi Churna:

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Parameters</th>
<th>Swayamguptadi Churna</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loss on Drying</td>
<td>8.57% w/w</td>
</tr>
<tr>
<td>2</td>
<td>Ash Value</td>
<td>6.51% w/w</td>
</tr>
<tr>
<td>3</td>
<td>Water Soluble Extract</td>
<td>44.27% w/w</td>
</tr>
<tr>
<td>4</td>
<td>Methanol Soluble Extract</td>
<td>25.45 % w/w</td>
</tr>
<tr>
<td>5</td>
<td>pH</td>
<td>5.0</td>
</tr>
</tbody>
</table>

(Table No. 4): HPTLC Results of Svaguptadi Churna:

<table>
<thead>
<tr>
<th>Sample</th>
<th>Detection Condition</th>
<th>No. of spots</th>
<th>Rf value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svaguptadi Churna</td>
<td>254 nm</td>
<td>5</td>
<td>0.01, 0.45, 0.67, 0.74, 0.92</td>
</tr>
<tr>
<td></td>
<td>366nm</td>
<td>3</td>
<td>0.01, 0.04, 0.85</td>
</tr>
</tbody>
</table>

Plate No: 1 Micro photographs of powder microscopy of Svaguptadi Churna (Plate: 1-12)

1) Brown content of Vidari
2) Cork cells of Vidari
3) Endosperm cells of Kapikachhu
4) Epicarp cells of Kapikachhu
5) Epidermal cells of Krushna Til
6) Epidermal cells of *Sweta Jirak*
7) Oil globule of *krushna Jirak*
8) Parenchyma cell of *Krishna Jirak*
9) Pittet vessels of *Ashwagandha*
10) Simple starch grains of *Ashwagandha*
11) Stone cell of *Krishna Til*
12) Trichome along with oil globule of *Sweta Jirak*

**Plate No-2: HPTLC Results of Svaguptadi Churna:**

**CONCLUSION**
Pharmacognostical and phytochemical evaluation of *Svaguptadi Churna* illustrated the specific characters of ingredients which were used in the preparation. Physicochemical profile is an essential parameter for quality assurance; in present work the obtained results were found within prescribed limits. For the first time, pharmaceutical and analytical profile of *Svaguptadi Churna* was established. On the basis of observations and experimental results, this study may use as reference standard in the further quality control researches.

**REFERENCES**