PHARMACOGNOSTICAL AND PHARMACEUTICAL ANALYSIS OF JATAMANSYADI TABLET

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ABSTRACT

Essential Hypertension (EHT) is one of those disastrous diseases which are psychosomatic, hereditary and occurring as a result of aging. Jatamansi Tablet is a compound herbal formulation which contains Jatamansi, Gokshura, Arjuna, Aswagandha and Brahmi in equal proportion. The present work was carried out to standardize Jatamansi Tablet to conform its identity, quality and purity. For these purpose Pharmacognostical evaluation based on organoleptic and microscopic characteristics and Pharmaceutical analysis of Jatamansi Tablet was carried out. The presence of Oil globules, Scleriform vessels, Rosette crystal, Tannin content, Simple Starch Grain, Border Pitted Vessels, Prismatic crystal, Annular vessels etc. were the characteristic features observed in the microscopy of drugs. Physico-chemical analysis shows water soluble extract 31.1% w/w, methanol soluble extract 31.3% w/w, total ash content 32.7% w/w and pH 4.5. Tablet Hardness 4.1 kg/cm2 and Tablet uniformity was 541 mg. High Performance Thin Layer Chromatography (HPTLC) at 254nm and 366nm resulted into 14 & 11 spots respectively.
KEYWORDS: HPTLC, Hypertension, Jatamansyadi Tablet, Pharmaceutical, Pharmacognosy.

INTRODUCTION
Medicinal plants are being used since Vedic era. Their identification, classification, properties and actions were well established in Ayurvedic classics. Today in present era global demand of Ayurvedic drugs are increasing. Therefore maintenance of quality standards of raw drugs, as well as prepared medicine is necessary. Administration of drug in various dosage forms provides an opportunity to the physician to choose better options. Various dosage forms have been described in Ayurvedic texts. One among them is Ghana Vati.[i] In the present study, Jatamansyadi Tablet which contains Jatamansi, Gokshura, Arjuna, Aswagandha and Brahmi in equal proportion was selected for management of Essential Hypertension. Essential Hypertension (EHT) is one of those disastrous diseases which are psychosomatic, hereditary and occurring as a result of aging. It is also called a silent or hidden killer because of its asymptomatic nature and dreadful effects. It is one of the main non-communicable disease (NCD) risk factors. It is currently the leading risk resulting in considerable death and disability worldwide and accounted for 9.4 million deaths and 7 per cent of disability adjusted life years (DALYs) in 2010.[ii] The relationship between Blood Pressure and risk of cardiovascular disease (CVD) events is continuous, consistent, and independent of other risk factors. The higher the BP, the greater is the chance of heart attack, heart failure, stroke, and kidney disease.[iii] Jatamansyadi Tablet is the compound formulation which has many properties and action which is useful in many diseases like Hypertension. Jatamansi has hypotensive, tranquillising, antianxiety effect; Gokshura has hypotensive, cardiotonic, diuretic properties; Arjuna has cardioprotective, anti-anginal effect; Ashwagandha has hypotensive, antistress, psychotrophic, cardioprotective properties and Brahmi has anti-anxiety property.[iv,v,vii,viii] All these drugs were taken in equal quantity and its Ghana Vati (Tablet) was prepared. As no standard finger print is available for this compound formulation, an attempt has been made to evolve preliminary Pharmacognostical and Physico-chemical profile of Jatamansyadi Tablet.

MATERIALS AND METHODS
Collection, Identification and Authentication of raw drugs
Properly dried raw drugs viz, Jatamansi (Nardostachys jatamansi Dc.), Gokshura (Tribulus terrestris Linn), Arjuna (Terminalia arjuna Wight &Arn.), Ashwagandha (Withania

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somnifera (L.) Dunal.) and Brahmi (Bacopa monnieri (L.) Wettst.) were obtained from the Pharmacy, G.A.U., Jamnagar. All the drugs were confirmed to be authentic and of good quality by the Pharmacognosy Laboratory, I.P.G.T. & R.A., G.A.U., Jamnagar.

**Method of Preparation of Jatamansyadi Tablet**

The considered drugs enlisted in table 1 taken in equal quantity were properly dried and pulverised into a coarse powder. All the five drugs were used to Prepare ¼ Kwatha (decoction) as per classical method. Further heat was given to make that Kwath (decoction) into semisolid consistency. Then powder of all these 5 drugs was added to make the granules. On the next day, the granules were punched into tablets of 500 mg each and uncoated tablets were packed in air-tight packing. The whole process of tablet preparations was done at Pharmacy of Gujarat Ayurved University, Jamnagar under the sterile environment.

**Pharmacognostical evaluation**

The purpose of the pharmacognostical study was to confirm the authenticity of the drugs used in the preparation of Jatamansyadi Tablet. Pharmacognostical evaluation of Jatamansyadi Tablet based on Organoleptic characters i.e. colour, taste, odour and texture which were recorded. For microscopic study, small quantity of Jatamansyadi Tablet dissolved in distilled water and filtered through filter paper then filtrate was dried and placed on slide, first observed in plain water and then stained with Phluroglucinol and concentrated HCl to study the characters of the drug. The micro-photographs were taken by using corl-zeiss Trinocular microscope attached with camera.[ix]

**Physico-chemical analysis**

In Physicochemical parameters loss on drying, ash value, and extractive values viz., methanol soluble extractive value, water soluble extractive value, Tablet Hardness, Tablet uniformity and pH value were determined as per the API guideline.[x] HPTLC were carried out after making appropriate solvent system with Methanolic extract of Jatamansyadi Tablet at the Pharmaceutical chemistry laboratory, I.P.G.T. & R.A, Jamnagar.

**RESULTS & DISCUSSION**

**Results**

**Pharmacognostical analysis**

Organoleptic characters of Jatamansyadi Tablet like colour, odour, taste and texture are described in the Table-2. Microscopic study of Jatamansyadi Tablet showed presence of oil
globules of *Jatamansi*, scleriform vessels of *Jatamansi*, rosette crystal of *Arjuna*, tannin content of *Arjuna*, simple starch grain of *Ashwagandha*, border pitted vessels of *Ashwagandha*, prismatic crystal of *Gokshura*, lignified fiber of *Gokshura*, Annular vessels and epidermal cells of *Brahmi*. (Figure-1: a-j).

**Physicochemical analysis**

Physicochemical analysis of *Jatamansyadi* Tablet showed water soluble extract 31.1% w/w, methanol soluble extract 31.3% w/w and Tablet uniformity 541 mg etc are depicted in Table-3.

**HPTLC study results**

On performing HPTLC, visual observation under UV light at 254nm, the chromatogram showed 14 peaks (Figure II, a) and 11 peaks at 366nm (Figure II, b). Rf values are described in Table-4.

**DISCUSSION**

Organoleptic characteristic showed that taste of *Jatamansyadi* Tablet was bitter as majority of its ingredient have bitter taste. *Jatamansyadi* Tablet consists of 5 herbal ingredients which were proved to be authentic and genuine by assessing the Pharmacognostical parameters. Powder microscopy of *Jatamansyadi* Tablet showed striking characters of all individual five drugs. This confirms the ingredients present in the finished product and there is no major change in the microscopic structure of the raw drugs during the pharmaceutical processes of preparation of Ghana formulation. The Physicochemical parameters showed Water soluble extract was 31.1% w/w & methanol soluble extract was 31.3% w/w. Total ashes are designed to measure the total amount of material remaining after ignition. Ash value of test drug was 32.7% w/w. pH is the measure of acidity or basicity of a solution. In the present sample pH was 4.5 showing the acidic nature of the solution. Loss on drying of this drug was 7.14% w/w which showed moisture content of drugs. This shows presence of certain constituents and is helpful for the easy separation of these constituents. Further Pharmaceutical process validation and standardization is required.

**Table I: Ingredients of *Jatamansyadi* Tablet**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Botanical Name</th>
<th>Part used</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jatamansi</td>
<td><em>Nardostachys jatamansi</em> Dc.</td>
<td>Rhizome</td>
<td>01 part</td>
</tr>
<tr>
<td>Gokshura</td>
<td><em>Tribulus terrestris</em> Linn.</td>
<td>Fruit</td>
<td>01 part</td>
</tr>
<tr>
<td>Arjuna</td>
<td><em>Terminalia arjuna</em> Wight &amp; Arn.</td>
<td>Stem bark</td>
<td>01 part</td>
</tr>
</tbody>
</table>
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Ashwagandha Withania somnifera (L.) Dunal. Root 01 part
Brahmi Bacopa monnieri (L.) Wettst. Panchanga 01 part

Table II: Organoleptic characters of Jatamansyadi Tablet

<table>
<thead>
<tr>
<th>Characters</th>
<th>Jatamansyadi Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Ash brown</td>
</tr>
<tr>
<td>Odour</td>
<td>characteristic</td>
</tr>
<tr>
<td>Taste</td>
<td>bitter</td>
</tr>
<tr>
<td>Consistency</td>
<td>Tablet, hard &amp; rough in touch</td>
</tr>
</tbody>
</table>

Table III: Pharmaceutical analysis of Jatamansyadi Tablet

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Analysis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Loss on drying percentage</td>
<td>7.14 % w/w</td>
</tr>
<tr>
<td>02</td>
<td>Ash Value</td>
<td>32.7 % w/w</td>
</tr>
<tr>
<td>03</td>
<td>Alcohol (Methanol) soluble extract percentage</td>
<td>31.3% w/w</td>
</tr>
<tr>
<td>04</td>
<td>Water soluble extract percentage</td>
<td>31.1 % w/w</td>
</tr>
<tr>
<td>05</td>
<td>Tablet Hardness</td>
<td>4.1 kg/cm²</td>
</tr>
<tr>
<td>06</td>
<td>Tablet uniformity</td>
<td>541 mg</td>
</tr>
<tr>
<td>07</td>
<td>pH value</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Table IV: Rf values of Jatamansyadi Tablet

<table>
<thead>
<tr>
<th>HPTLC</th>
<th>Rf Values at 254nm</th>
<th>Rf Values at 366nm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.02, 0.06, 0.12, 0.15, 0.2, 0.27, 0.33, 0.4, 0.49, 0.52, 0.59, 0.68, 0.76, 0.97</td>
<td>0.02, 0.06, 0.2, 0.27, 0.33, 0.38, 0.41, 0.49, 0.52, 0.66, 0.7</td>
</tr>
</tbody>
</table>

(a) oil globules of Jatamansi
(b) scleriform vessels of Jatamansi
(c) rosette crystal of Arjuna
(d) tannin content of Arjuna
Figure I: Pharmacognostical Characteristics of Jatamansi Tablet

(e) simple starch grain of *Ashwagandha*  
(f) border pitted vessel of *Ashwagandha*

(g) prismatic crystal of *Gokshura*  
(h) lignified fibre of *Gokshura*

(i) annular vessels of *Brahmi*  
(j) epidermal cell of *Brahmi*
CONCLUSION

In present research work pharmacognostic and phyto-chemical evaluation of Jatamansyadi Tablet was performed which is useful in the management of many diseases like hypertension. Pharmacognostic findings confirm the ingredients present in the Jatamansyadi Tablet and there is no major change in the microscopic structure during the pharmaceutical processes of preparation of Ghana Vati (Tablet). The results of this study may be used as the reference standard in further research undertakings of its kind.

REFERENCES

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