PHARMACOGNOSTICAL & PHYSICOCHEMICAL STANDARDIZATION OF YASHTIMADHU TABLET- AN AYURVEDIC FORMULATION

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ABSTRACT

According to the Ayurvedic principles, a drug or therapy should not be only having pacifying effect on disease, but also it must not create any adverse effect or complication. A drug should not be only efficacious, but also easily available. Glycyrrhiza glabra is a commonly used traditional medicinal plant and is found in abundant traditional formulas. Yashtimadhu is considered as Pitta pacifying and effective in all Pittaja Vikara in Ayurvedic treatises hence Yashtimadhu was selected in the present study for the management of Pittaprakopa. The present study was aimed at setting up a standard profile of Yashtimadhu Tablet which was prepared using pharmacognostically authenticated the root of Yashtimadhu (Glycyrrhiza glabra Linn.) drug followed by subjecting it to detailed physicochemical analysis as per standard protocol. The observations were systematically recorded. Pharmacognostical findings (Border pitted vessel, Compound starch grain, Cork in surface, Crystal fibre, Rhomboidal crystal, Lignified fibres, Simple fibre, Simple starch grains, Scleroides, Tannins etc.) confirm the ingredient i.e. root of Yashtimadhu present in the Yashtimadhu Tablet as per API which support the intended action of the formulation in Pittaprakopavastha.

KEYWORDS: Pharmacognosy, Physico-chemical analysis, Pittaprakopavastha, Yashtimadhu Tablet.
INTRODUCTION
The word liquorice is derived from the greek word meaning ‘sweet root’.\textsuperscript{[1]} Liquorice or licorice is the root of Glycyrrhiza glabra from which a sweet flavour can be extracted.\textsuperscript{[2]} The liquorice plant is a herbaceous perennial legume native to southern Europe, India and parts of Asia. It is a herbaceous perennial, growing to 1 m in height, with pinnate leaves about 7-15 cm long, with 9-17 leaflets. The flowers are 0.8-1.2 cm long, purple to pale whitish blue, produced in a loose inflorescence. The roots are stoniferous.\textsuperscript{[3]} Much of the sweetness in liquorice comes from glycyrrhizin, which has a sweet taste, 30-50 times the sweetness of sugar.\textsuperscript{[4],[5]} Glycyrrhizin has also antiviral, antimicrobial, anti-inflammatory, hepatoprotective and blood pressure increasing effects in vitro and in vivo, as is supported by the finding that intravenous glycyrrhizin slows the progression of viral and autoimmune hepatitis.\textsuperscript{[6],[7]} The antiulcer, laxative, antidiabetic, anti-inflammatory, immunomodulatory, antitumor and expectorant properties of liquorice have been investigated.\textsuperscript{[8]} Licorice is useful for many ailments including Irritation, ulcers, heartburn, cholesterol, fever, pain, stress, hepatitis, menstrual problems, psoriasis, asthma, body odour, canker sores, depression, colds, coughs, gingivitis and liver problems, sore throat, prostate enlargement and arthritis.\textsuperscript{[9]} It has been mentioned in the classics that it possesses Guru-Snigdha Guna, Madhura Rasa, Madhura Vipaka and Shita Virya it was selected in this study to evaluate its efficacy in the condition of Pittaprapoka.

MATERIALS AND METHODS
Collection of Raw Drugs
Healthy dried roots of Glycyrrhiza glabra were collected from the Pharmacy of Gujarat Ayurved University, Jamnagar.

Preparation of Yashtimadhu Tablet
The formulation Yashtimadhu Tablet was prepared by using pharmacognostically authenticated samples of Yashtimadhu root. The roots were dried and powder was made in the Pharmacy of Gujarat Ayurved University, Jamnagar. Then the powder was compressed in a single punch tablet press with a target weight of 500 mg for uniformity of dose.

Pharmacognostical Evaluation
Raw drug i.e. root of Yashtimadhu (Glycyrrhiza glabra Linn.) was identified and authenticated by the Pharmacognosy department, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar. The study was carried out by T.S. of Yashtimadhu Root and Powder
Microscopy of *Yashtimadhu* Tablet. The identification was carried out based on morphological features, organoleptic characters and powder microscopy of the drugs as mentioned in API. Microphotographs were taken by using Carl-Zeiss Trinocular microscope (Plate-1).

**Pharmaceutical Evaluation**

Following parameters were analyzed for different physico-chemical parameters by today’s routine methods at the pharmaceutical chemistry lab, IPGT& RA, Jamnagar.

**Physico-chemical Parameters**

1. Organoleptic examination
2. Uniformity of the tablet
3. Ash Value
4. Water Soluble extract
5. pH
6. Tablet Hardness
7. Loss on Drying
8. Ethanol Soluble extract

**RESULTS AND DISCUSSION**

**Pharmacognostical study**

The initial purpose of the study was to confirm the authenticity of the drug used in the preparation of *Yashtimadhu* Tablet. For that microscopy of root of *Yashtimadhu* showed Border pitted vessel, Compound starch grain, Cork in surface, Crystal fibre, Rhomboidal crystal, Lignified fibres, Simple fibre, Simple starch grains, Scleroides, Tannins etc. Results matched with the API and thus confirmed the genuineness of the drugs used in the finished product.

**Organoleptic findings**

Organoleptic findings of *Yashtimadhu* Tablet is given in Table 1.

**Pharmaceutical Evaluation**

Physico-Chemical parameters of *Yashtimadhu* Tablet like Uniformity of the tablet Ash Value, Water Soluble extract, pH, Tablet Hardness, Loss on Drying, Ethanol Soluble extract all were found to be within the normal range. Details are given in Table 2.
In the present study a pharmaceutical preparation of *Yashtimadhu* Tablet was tried. Its pharmaceutical properties had to be studied; hence the formulation was subjected to minimum Pharmacognostical and Pharmaceutical analysis. Pharmacognostical evaluation of root of *Yashtimadhu* showed the specific characteristic features found in microscopy confirm the same and showed that the genuinity of the drug. There are many compounds as well as single drugs mentioned in *Ayurvedic* treatises to pacify *Pitta Prakopa*. In the 2\textsuperscript{nd} stage of *Shatkriyakala* i.e. *Prakopavastha* the *Doshas* are not much vitiated and the specific disease is not manifested at this stage. Since single drug selection on the basis of its *Guna* is more useful to mitigate the *Prakupita Pitta Dosha*, hence single drug *Yashtimadhu* has been chosen.

### Table 1. Organoleptic examination

<table>
<thead>
<tr>
<th>Properties</th>
<th><em>Yashtimadhu</em> Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Yellowish</td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic Sweetish</td>
</tr>
<tr>
<td>Taste</td>
<td>Sweet</td>
</tr>
<tr>
<td>Nature of the powder</td>
<td>Coarse</td>
</tr>
</tbody>
</table>

### Table 2. Results of the drug analysis on Physico-chemical parameters

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Uniformity of tablet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Highest weight</td>
<td>578 mg</td>
</tr>
<tr>
<td></td>
<td>Lowest weight</td>
<td>496 mg</td>
</tr>
<tr>
<td></td>
<td>Average weight</td>
<td>529 mg</td>
</tr>
<tr>
<td>2</td>
<td>Ash value</td>
<td>8.057 % w/w</td>
</tr>
<tr>
<td>3</td>
<td>Water soluble extract</td>
<td>15.99 % w/w</td>
</tr>
<tr>
<td>4</td>
<td>Ph (5% v/w aqua solution)</td>
<td>5.5</td>
</tr>
<tr>
<td>5</td>
<td>Tablet hardness</td>
<td>4.1 kg/cm(^2)</td>
</tr>
<tr>
<td>6</td>
<td>Loss on drying</td>
<td>0.579 % w/w</td>
</tr>
<tr>
<td>7</td>
<td>Ethanol soluble extract</td>
<td>11.79 % w/w</td>
</tr>
</tbody>
</table>

Plate -1: Microphotographs of *Yashtimadhu*

- Border pitted vessel
- Compound starch grains
CONCLUSION
Pharmacognostical findings confirm the ingredient of Yashtimadhu Tablet and there is no major change in the microscopic structure of the drug during the pharmaceutical processes of preparation of Tablet. The drug assumed as effective to pacify Pitta Prakopa was considered to have Pitta-Vatashamaka properties. It is inferred that the formulation meets minimum qualitative standards as prescribed by API at preliminary level. The results of this study may be used as the reference standard in further research undertakings of its kind.

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