A Pharmacognostical and Phytochemical study of Kanchanara Gutika

Research Article

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Abstract

Kanchanara gutika is one of the preparations of the Ayurveda, which is used for the treatment of the Thyroid disorders. It is in use since many years with good clinical outcome. But the pharmacognostic and phytochemical studies of the drug has not been carried out yet. Hence to study them this study is planned. Aim: Authentication of the raw drugs of Kanchanara gutika and phytochemical evaluation of the finished product. Materials and methods: The present study deals with the Pharmacognostical identification of the ingredients of Kanchanara Gutika and its physicochemical analysis. Thin Layer chromatography study (TLC) was also developed. Results: Pharmacognostical results showed Pippali catkin with fruit, Maricha with the epicarp and the oil globules, Sunti with oleoresins and vascular bundles, Haritaki with fibres, Amlaki with epicarp and mesocarp, Vibhithaki with stone cells and Kanchanara with xylem and phloem vessels. Qualitative studies shows that Loss of drying 33%, PH 4.72%, Water soluble matter 12%, Alcohol soluble matter 19%, Total ash 3%, Acid insoluble ash 2.5%, Dissolution time 4%, Moisture content 8%. The TLC chromatograph showed five bands at Rf 0.21(Yellow), 0.28 (Grey), 0.47 (Brown), 0.56 (Violet), 0.93 (Orange). Conclusion: Pharmacognostical study revealed genuineness of the raw drugs. Physicochemical and TLC studies inferred that the formulation meets the minimum quality standards. The inference from this study may be used as reference standard in the further quality control researches.

Key Words: Endocrinal disorders, Hypothyroidism, Galaganda, Kanchanara Gutika, Thin Layer Chromatography study.
• To Study the phytochemical characters of the Kanchanara Gutika preparation.
• Compare the results with the standard literature available.

Materials and Methods:
All the ingredients of Kanchanara Gutika were procured from the local markets of Tirupati, Andhra Pradesh. The raw drugs were authenticated by the Dept of Dravya Guna, S.V. Ayurveda College, TTD, Tirupati. The ingredients and the part used are given in Table no.1

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Drug Name</th>
<th>Part used</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Triphala</td>
<td>Terminalia chebula Retz.</td>
<td>Fruit pulp</td>
</tr>
<tr>
<td></td>
<td>Haritaki</td>
<td>Terminalia bellirica (Gaertn.) Roxb.</td>
<td>Fruit pulp</td>
</tr>
<tr>
<td>2</td>
<td>Vibhitaki</td>
<td>Phyllanthus emblica L.</td>
<td>Fruit pulp</td>
</tr>
<tr>
<td>3</td>
<td>Amalaki</td>
<td>Pippali</td>
<td>Fruit catkin</td>
</tr>
<tr>
<td></td>
<td>Shunti</td>
<td>Zingiber officinale Roscoe.</td>
<td>Rhizome</td>
</tr>
<tr>
<td>4</td>
<td>Marica</td>
<td>Bauhinia variegata (L.) Benth</td>
<td>Bark</td>
</tr>
<tr>
<td>5</td>
<td>Kanchanara twak</td>
<td>Commiphora wightii (Arn.) Bhandari</td>
<td>Gum</td>
</tr>
<tr>
<td>6</td>
<td>Guggulu</td>
<td>Commiphora wightii (Arn.) Bhandari</td>
<td>Gum</td>
</tr>
<tr>
<td>7</td>
<td>Honey</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Method of Preparation of Kanchanara Gutika
Ingredients enlisted in Table 1 were collected from the local market in Tirupati and are shade dried. They are cleaned to remove any foreign material. Then the ingredients are made into fine powder individually. The individual ingredients are weighed according to the ratio mentioned in table 1 and are mixed in a mass mixing machine. After a homogeneous mixture was obtained purified Guggulu (purified by Triphala Kwatha was added). Finally, honey was added. To make the preparation more palatable, it is made into soft gel capsules for the clinical use. The weight of each capsule is 1000 mg +/- 1%. It was oval in shape, dark in colour with pleasant odour and soft to touch. It can be stored and kept in well closed containers.

Pharmacognostical study
The pharmacognostical study of the individual ingredients used in the study and the authentication of the ingredients was done at Department of Dravyaguna, SV Ayurvedic College, as per the standard format of the Macroscopic and microscopic identification process mentioned in the API format. The characters were correlated with the standard findings mentioned in API volumes regarding the individual drugs.

Phytochemical study
This Gutika was analyzed using various standard physicochemical parameters as per API at the Varun Herbals Research and Testing Lab, Hyderabad, Telangana.

Observations and Results
Organoleptic parameters: Organoleptic parameters (2) like, Colour, odour and touch were scientifically studied and results were depicted in the table. (Table 2)

Physico-chemical analysis: Physicochemical parameters of Kanchanara gutika like Uniformity of the weight, Loss on drying, Ph, Ash Value, Water soluble extract, Methanol soluble extract, Acid insoluble ash and TLC were evaluated. The results are depicted in Table no.3.

Microscopic characters of the ingredients of Kanchanara Gutika
Figure 1: Transverse section of the Pippali fruit
Thin layer chromatography study (TLC):
TLC study was carried out by VHIP method using Toulene and Ethyl acetate (9:1) during the mobile phase and Silica gel during the stationary phase. Vanillin and H\textsubscript{2}SO\textsubscript{4} reagent was the spraying agent used for the TLC Study. The chromatograph showed five bands at Rf 0.21(Yellow), 0.28 (Grey), 0.47 (Brown), 0.56 (Violet), 0.93 (Orange). Rf values of the bands obtained were at a comparable level which indicates the presence of some definite constituents in the sample. The results are depicted in Table no.4.

**Table 4: Results of TLC of Kanchanara Gutika**

<table>
<thead>
<tr>
<th>Method</th>
<th>VHIP method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reagent</td>
<td>Vanillin and H\textsubscript{2}SO\textsubscript{4}</td>
</tr>
<tr>
<td>Solvent</td>
<td>Mobile phase Toulene and Ethyl acetate (9:1)</td>
</tr>
<tr>
<td></td>
<td>Stationary phase Silica gel</td>
</tr>
<tr>
<td>Bands</td>
<td>Five</td>
</tr>
<tr>
<td>Rf values</td>
<td>0.21(Yellow), 0.28 (Grey), 0.47 (Brown), 0.56 (Violet), 0.93 (Orange).</td>
</tr>
</tbody>
</table>

**Discussion**
Pharmacognostical evaluation of *Kanchanara gutika* showed the specific characters of all the ingredients which were used in the preparation.

**Pippali (Piper longum Linn.)**
The transverse section showed catkin with fruit. The fruit T.S showed different layers as the outer epidermis with a thick cuticle, the middle thin layered mesocarp and an inner endocarp filled with starch grains\(^8\). The phyto chemical analysis of *Pippali* powder showed the presence of phenol compounds (tannins), saponins, proteins, amino acids, flavonoids, steroids and triterpenoids.

**Maricha (Piper Nigram Linn)**
The transverse section of the fruit showed a thick pericarp. The enlarged section of the fruit showed the three layers of pericarp which includes the epicarp, mesocarp and endocarp. The epicarp showed epidermis and the mesocarp showed oil cells present in the outer region\(^8\). The phyto-chemical analysis of *Maricha* powder...
showed the presence of phenol compounds (tannins), saponins, proteins, aminoacids, steroids and triterpenoids.

**Shunti (Zingiber officinale Roxb.)**

Transverse section of the rhizome showed cortex with parenchyma and idioblasts with yellow brown oleoresins. The endodermis showed vascular bundles(9). Phytochemical analysis of Sunti exhibited the presence of steroids, triterpenoids, phenolic compounds, tannins and acids.

**Haritaki (Terminalia Chebula Retz.)**

The transverse section of the fruit showed epicarp, mesocarp and endocarp. The enlarged section showed mesocarp with vascular bundles and fibers with peg like out growths(10). The phyto-chemical analysis of Haritaki powder showed the presence of phenol compounds, saponins, proteins, amino acids, flavonoids, steroids, triterpenoids and acids.

**Amalaki (Emblica officianalis Guert.)**

The Transverse section of the fruit showed epicarp with a single layered epidermis and mesocarp with parenchymatous cells (11). The phytochemical analysis showed the presence of carbohydrates, glycosides, phenol compounds, saponins, proteins, amino acids, flavonoids, steroids and triterpenoids.

**Vibhitaki (Terminalia bellerica Roxb.)**

The phytochemical analysis of Vibhitaki powder showed the presence of phenol compounds (tannins), proteins and amino acids, flavonoids and presence of acids. Transverse section of the fruit showed an outer epicarp and inner mesocarp. Epicarp contained stone cells in the periphery and the mesocarp showed stone cells in groups (12).

**Kanchanara (Bauhinia variegata Linn.)**

Transverse section of mature stem bark showed cortex with an outer and an inner cork and a secondary cortex. The enlarged section showed annual rings with xylem vessels and phloem (13). The phytochemical analysis of Kanchanara powder showed the presence of carbohydrates, cardiac glycosides, tannins, steroids and triterpenoids.

**Guggulu (Commiphora mukul Hook Ex Stocks.)**

Phyto-chemical analysis of guggulu resin showed the presence of flavonoids, steroids, triterpenoids, acids and carbohydrates.

**Madhu (Honey)**

Phytochemical analysis of madhu has showed the presence of carbohydrates, glycosides, phenolic compounds (tannins), saponins, proteins, amino acids and flavonoids.

**Phytochemical analysis of Kanchanara Gutika**

Phyto-chemical analysis of the finished drug Kanchanara gutika showed the presence of the phenol compounds tannins, saponins, proteins, amino acids, flavonoids, steroids, triterpenoids, acids, anthraquinone glycosides and carbohydrates.

**Physicochemical analysis of Kanchanara Gutika**

The physico-chemical analysis showed Loss of drying 33%, PH 4.72%, Water soluble matter 12%, Alcohol soluble matter 19%, Total ash 3%, Acid insoluble ash 2.5%, Dissolution time 4%, Moisture content 8%. Kanchanara gutika was dark brown in colour with a pleasant odour and soft to touch. The TLC chromatograph showed five bands at RF 0.21(Yellow), 0.28 (Grey), 0.47 (Brown), 0.56 (Violet), 0.93 (Orange). RF values of the bands obtained were at a comparable level which indicates the presence of some definite constituents in the sample.

**Conclusion**

Thus, from the above study it can be concluded that the kanchanara gutika prepared with the genuine ingredients will be dark brown in colour, pleasant in odour and soft to touch. It contains tannins, saponins, proteins, flavonoids, steroids etc which are also a part of the independent ingredients used. On TLC it produces five bands at rf. values 0.21, 0.28, 0.47, 0.56 and 0.93. Thus, this study and give a guideline for further research and standardization of Kanchanara gutika.

**Sources of funding:** None

**Conflict of interest:** None

**References**

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