HEAVY METAL ANALYSIS, ASSAY OF TOTAL TANNIN AND HPTLC STUDY OF HARITAKI CHURNA

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ABSTRACT
Ayurveda is one of the oldest science in the world. In the resent years ayurveda has faced lot of criticism worldwide, It can be because of poor manufacturing practice and not using proper methods for the preparation of bhasmas from heavy metals and contamination of the herbal drugs with heavy metals. To prepare a good medicine drugs having high potency and free from any heavy metal contamination is essential. The present study highlights the heavy metals analysis (Pb, As, Cd & Hg), assay of total tannin and HPTLC study of Haritaki Churna from Parul Ayurveda Pharmacy. This study will help in further preparation of good quality medications and which can be used in treatment.

KEYWORDS: Haritaki, church, heavy metals, tannin, HPTLC.

INTRODUCTION
Haritaki is one of the most important and commonly used drugs in the field of Ayurveda throughout India in various formulations and eatables. As the name suggests, the fruits are believed to be capable of eliminating the vitiated mala and doshas from the body. The use of Haritaki can be traced from the periods of vedas. In the Atharvaveda use of Haritaki is mentioned along with karpura in a condition of purishnirodha (constipation). In the ancient text “Garuda purana” the use of Haritaki Kashaya(decoction) in Dantarogas has been mentioned. In Samhitas Acharyas have mentioned the use of Haritaki extensively in various
preparation’s. for preparation of any formulation the ingredients should be of good quality, having high efficacy and free from any heavy metals contamination. In the present study an attempt is made to analysis the efficacy of *Haritaki* churna from Parul Ayurveda Pharmacy.

**AIM**

To assess the Heavy metal analysis, Assay of total tannin and HTPLC study of *Haritaki churna* from Parul Ayurveda Pharmacy, Parul Institute of Ayurveda, Parul University Vadodara.

**OBJECTIVES**

- Heavy metal analysis
- Assay of total tannin
- HTPLC study

**PLACE OF WORK**

- Parul Ayurveda pharmacy, Vadodara – Gujarat
- Vasu Pharmaceuticals Vadodara – Gujarat

**MATERIAL AND METHODS**

- Row drug of *Haritaki* (fruit pulp) was collected from Parul Ayurveda Pharmacy, Parul University, Vadodara - Gujarat

  - **Drug authentication**
    
    Authentication of the drug was done by the Department of Botany, Faculty of Science, Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. *Terminalia chebula* Retz. (*Haritaki*) was compared with BRO123450009404.

  - **Preparation of Haritaki churna**
    
    Preparation of *churna* was done at Parul Ayurveda Pharmacy, Vadodara. All physical impurities were discarded from the sample and the row dried form of the sample and was taken to prepare *churna*. The drugs was then made into powder (*churna*) with the help of pulverizer machine. This powder (*churna*) was filtered through an 80, 60 number mesh to achieve fine powder. After the preparation of *church* it was stored in an air tight container which was further used for the study.
Precaution during *churna* Preparation
Humidity was noted at regular time interval throughout the preparation. Gloves, masks and head cap were used for maintenance of hygiene throughout preparation. All instrument used during preparation were cleaned properly before and after procedure. Hygiene was maintained throughout the procedure.

**TEST FOR ASSAY**
Standard Testing Procedure for Assay of Total Tannin Residue by Gravimetry was adopted.

**HEAVY METAL**
Standard Testing Procedure for Heavy Metal Analysis was adopted by AAS method.

**HPTLC**
HPTLC study was performed for *Haritaki Churna*.

Preparation of test solutions (T): Accurately weighed 2.00 g of sample individually into iodine flask and add 20 mL methanol to it. Reflux it for 45 min. and Filter it by Whatman Filter paper No. 1. Evaporate it on water bath and make the volume up to 10mL with Methanol and use it for HPTLC finger-printing.

**RESULTS**

**ASSAY FOR HARITAKI**

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Parameters</th>
<th>Haritaki</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assay of Total Tannin</td>
<td>30.22%</td>
</tr>
</tbody>
</table>

**HEAVY METAL ANALYSIS**

<table>
<thead>
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<th>Sr.No</th>
<th>HEAVY METAL ANALYSIS</th>
<th>Haritaki</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lead (NMT 10 ppm)</td>
<td>Absent</td>
</tr>
<tr>
<td>2</td>
<td>Cadmium (NMT 0.3 ppm)</td>
<td>Absent</td>
</tr>
<tr>
<td>3</td>
<td>Mercury (NMT 1 ppm)</td>
<td>Absent</td>
</tr>
<tr>
<td>4</td>
<td>Arsenic (NMT 3 ppm)</td>
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</tbody>
</table>

**HPTLC**

Rf @ 254 nm

<table>
<thead>
<tr>
<th>S.No</th>
<th>Rf @ 254nm</th>
<th>Rf@ 366nm</th>
<th>Rf@524nm</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>0.13</td>
<td>0.31</td>
<td>0.03</td>
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<td>7</td>
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<td>-</td>
<td>0.69</td>
</tr>
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</table>
DISCUSSION

Dried fruit pulp of Haritaki was taken from Parul Ayurveda Pharmacy and was authenticated by the Department of Botany, Faculty of Science, Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. Fine powder of the drug was prepared at the Parul Ayurveda Pharmacy. It was sent to Vasu Pharmaceuticals Vadodara for further tests.

Heavy Metal Analysis

In the tests for heavy metal Analysis Lead, Mercury, Arsenic and Cadmium was found to be completely absent.

Assay of Total Tannin

30.22% of total tannin was found in the sample of Haritaki Churna.

HPTLC findings

At Rf 254nm 7 spots were visible, at Rf 366nm 2 spots were visible and at Rf 540nm 7 spots were visible.

CONCLUSION

The present study supports the development of the drug. Our study revealed the presence of medicinally important constituents in the Haritaki churna.

Therefore, the Churna of Haritaki can be used as a good source for the formulation of useful drugs and their quantified values can be used as a major tool for obtaining a quality control profile for a drug. It may be concluded that this sample may be utilized for quality products.
REFERENCES
