

“A comparative pharmacognostical, physicochemical and heavy metal analysis of *Musta* (*Cyperus rotundus* Linn) rhizome obtained from natural (*Prashasta Bhumi*) and polluted (*Aprashasta Bhumi*) sources”



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ABSTRACT

A comparative pharmacognostical, physicochemical and heavy metal analysis of *Musta* (*Cyperus rotundus* Linn) rhizome obtained from natural (*Prashasta Bhumi*) and polluted (*Aprashasta Bhumi*) sources

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INTRODUCTION

Musta plant is known to have several medicinal values. It is used to relieve fever, in reducing burning sensation, excessive thirst etc. There are several pharmaceutical companies which use Musta in different medicinal formulations. But there are no specific regulations from where it is collected. *Acharya's* have mentioned about specific *bhumi* for the collection of medicinal plants. The soil with presence of big stones, excessive water, with *valmika* (snake nest) should be avoided. On the other hand unctuous, smooth, tight, blackish-white or reddish soil and with grass is best for finding quality herbs. Herbs from such soil are only recommended for collection of raw material. If the herb is collected from the polluted area it might show the presence of pollutants such as heavy metals in it. Plants are sensitive to environmental conditions and they accumulate these heavy metals in their harvestable parts. Some of the heavy metals are not essential for plants and these are insidiously toxic to mammals. Accumulation and magnification of heavy metals in human tissues through consumption of herbal remedies can thus cause hazardous impacts on health. Hence the study is important to understand the differences in properties and accumulation of heavy metals in the plant which can be used for the

putting up the specification for the pharmaceutical companies to choose particular plant from the particular region.

AIM AND OBJECTIVES:

AIM

To compare Heavy metal analysis of *Musta (Cyperus rotundus Linn.)* rhizome obtained from natural and polluted sources.

OBJECTIVES

- 1] To study the plant *Musta (Cyperus rotundus Linn)* rhizome pharmacognostically obtained from natural and polluted sources.
- 2] A physicochemical analysis of *Musta (Cyperus rotundus Linn.)* rhizome obtained from natural and polluted sources.
- 3] Heavy metal analysis of soil obtained from natural and polluted sources.

METHODOLOGY:

1. Conceptual study

a . Drug review

b. Concept of *Bhumi*

2. Analytical study

a. Pharmacognostical study

b. Physicochemical study

c. Determination of *Rasa* (by Taste Threshold Methods collected from *Prashasta bhumi*)

3. Heavy metal analysis

OBSERVATIONS & RESULTS:

It was observed that the number of rhizomes found per plant was higher in plants collected from non-polluted areas than in polluted areas. Further the size of the rhizome was bigger in samples collected from non-polluted soil than in polluted area. However, the organoleptic parameters of both the samples were found to be similar in colour, odour, taste and smell.

Different physico-chemical parameters such as pH, total ash, moisture content and water and alcohol soluble extractives were determined. The pH of both the samples was approximately near the neutral range. Further it was observed that most of the parameters i.e. loss on drying and ash content were within the acceptable limits given by API. Both water and alcohol soluble extractives were lower in *Musta* samples collected from *aprashasta bhumi* than from *prashasta bhumi*. The *rasa* threshold of *Musta churna* was found to be 270 mL. The TLC analysis revealed more bands in *prashasta* than in *aprashasta bhumi* indicating lesser active compounds in samples from polluted areas. Heavy metal such as Lead was found to be above the permissible limit set by API in rhizome from *aprashasta bhumi*.

CONCLUSION

Heavy metals were below the permissible limit (as per API) in *Musta* samples from *prashastha bhumi*. The study suggests that quantitative values of physico-chemical analysis were obtained best in samples collected from *prashasta bhumi* (as per API). This study has proved that the *Musta* rhizome *churna* was affected by the place of collection. Presence of heavy metals like Lead above permissible level was seen in the sample collected from *aprashasta bhumi* making it unfit for use. Hence the study suggest that rhizome of *Musta* collected from only *prashasta bhumi* should be used for the therapeutic and medicinal use.