



## Phytochemical analysis of the methanol extract of root bark of *Hiptage benghalensis* (L.) Kurz

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### ABSTRACT

Extraction of the root bark of *Hiptage benghalensis* was done with Soxhlet apparatus using methanol by hot continuous extraction for 35 hrs. The extract was concentrated and dried using rotary vacuum evaporator and the extracts were used for testing the phytochemical content. The preliminary phytochemical group test revealed the presence of alkaloids, tannins and reducing sugars.

**Key words:** Alkaloids; herbal medicines; phytochemical; reducing sugars; tannins.

### INTRODUCTION

Herbal medicines have the ability to affect body systems. The effects are dependent on the chemical constituents present in the plant used. Scientists first started extracting and isolating chemicals from plants in the 18<sup>th</sup> century,<sup>1</sup> since then it is a growing inventory and that has to look into at herbs and their effects in terms of the active constituents they contain. The use of drugs derived from plants has been in practice for a very long time<sup>2</sup> because of the high rate of mortality caused by bacterial infections and diseases in human population and its significance cannot be over emphasized with the recent trend of high percentage of multidrug resistance to the present

day antibiotics.<sup>3,4</sup>

The most ideal phyto-chemical analysis is fresh plant tissues and the plant material under investigation should be plunged into boiling alcohol within a minute of collection. Alternatively, plants may be dried before extraction under controlled conditions or in shade to avoid occurrence of any chemical changes. It should be dried as quickly as possible, without using high temperature preferably in a good air draft. Indeed analysis of flavonoids, steroids, alkaloids, quinines and terpenoids has been successfully carried out on herbarium plant tissue dating back many years.<sup>5</sup>

*Hiptage benghalensis* (L.) Kurz is a large, woody, evergreen, straggling or climbing shrub with young branches being grey tomentose. It belongs to the family Malpighiaceae. The opposite and entire leaves are oblong to ovate-lanceolate, 9-21 cm long and 4-9 cm wide, acute or acuminate, glabrous,

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and have petioles of *c.* 1 cm length. White and fragrant flowers of 2-3 cm diameter are borne in erect, pubescent racemes of 10-20 cm length, the pedicels being 15-20 mm long. Flowers have a yellow centre and orbicular to elliptic petals that are hairy outside. Fruits are samaras with three wings each, the middle wing being 4-6 cm long and the lateral wings 2-3 cm long.

The root bark of the plant is used commonly and effectively by the local people. It has been found that almost all the household, where the plant is found, stored the dried root bark in a powdery form prepared indigenously for emergency. They used decoction of the root bark taken orally for stomachache, chewed in a raw for diarrhea and the powdered root bark mixed with water is use for dysentery.<sup>6</sup>

## MATERIALS AND METHODS

### *Geographical distribution*

*H. benghalensis* is not common in Mizoram, found mostly in the south-eastern and southern part of Mizoram like Cherhlun, Ngharchhip, Thenzawl and S. Lungrang. It is mostly found in clayey soil. The plant sample was collected from Cherhlun in Lunglei district which lies in the latitude of 22°59'58.14" N and 93° 05' 29.15"E longitude with an elevation of 1311.25 m, and Ngharchhip (Lunglei district) 22°58'0.42" N latitude and 93° 06' 07.52" E longitude with elevation 1047.25 m.

### *Collection and identification of plant*

The plant was during November, 2008. Herbarium sheet was prepared and the voucher specimen was identified and authenticated by Botanical Survey of India, Kolkata (Reference No: CHN/21/2012/Tech.II/661, dated 16-02-2012).

### *Plant materials*

The collected plant materials, i.e. root bark, were washed with distilled water and dried in ventilated room under shade, pulverized by grinder and passed through 60 mesh sieve to get the fine powder.

### *Extraction*

The extraction of the dried root bark was done by Soxhlet apparatus using methanol as a solvent. Extraction was done for 40 hrs, till the solvent above the powdered drug became colourless. The extract thus obtained were evaporated using rotary vacuum evaporator until the extracts became a dark-brown color, semi solid mass. The concentrated extracts were refrigerated for further analysis.

### *Phytochemical group tests*

A qualitative phytochemical test to detect the presence of alkaloids, tannins, saponins, flavonoids, glycosides and phenols was carried out using the methods of Kokate (1994), Trease and Evans (1972) and Ali (1998).<sup>7-9</sup> The intensity of the coloration determines the abundance of the compound present.

## RESULT

The result of the phytochemical group tests for methanol extract of *H. benghalensis* is given in table 1.

From the result shown in table we can say that alkaloids, reducing sugars and tannins are the secondary metabolites present in the root bark of *H. benghalensis*.

## DISCUSSION AND CONCLUSION

The curative properties of medicinal plants are due to the presence of various secondary metabolites such as alkaloids, flavonoids, glycosides, phenols, saponins, sterols, etc. The

Table 1. Preliminary phytochemical group tests of the methanol extract of *H. benghalensis*.

Sl No.	Phytoconstituents	Inference
1	Alkaloids	+
2	Flavonoids	-
3	Steroids	-
4	Triterpenoids	-
5	Amino acids	-
6	Reducing sugar	+
7	Tannins	+
8	Saponins	-
9	Gums	-

+ = present; - = absent.

methanol extract of the root bark of *H. benghalensis* have revealed the presence of alkaloids, tannins and reducing sugar (Table 1). The presence of alkaloids may be the main reason why the plant extract showed therapeutic action in the traditional use since alkaloids have traditionally been of great interest to humans because of their pronounced physiological and medicinal properties. Many naturally occurring alkaloids have indeed proved to be biologically and therapeutically active and have found numerous medical applications (e.g. morphine, atropine, and quinine) or served as model compounds for modern synthetic drugs.

Tannins have also been known since long time as the astringent substance, having the capacity to combine with tissue proteins and precipitate them. They are therefore used in medicine in allied purposes or as mild antiseptics in treatment of diarrhea, and to check small hemorrhages. Hence, the presence of tannins in the plant extracts may also be the reason why the plant is being proved to be traditionally useful for treating diarrhea and dysentery. Thus the preliminary screening tests of the methanol extract of root bark may be useful in the detection of the bioactive principles and subsequently may lead to the

drug discovery and development. Further detailed study may reveal the actual presence of biologically active compounds in the plant extract.

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