

**Physico-chemical properties of ethno-medicinal  
plant *Hygrophila auriculata*  
and *Paederia foetida* leaves grown in herbal  
kitchen garden**

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# Ethno Botany

- ❖ **Ethno medicine is a study or comparison of the traditional medicine practiced by various ethnic groups, and especially by indigenous peoples.**
- ❖ **Scientific study of relationship that exist between people and plants.**
- ❖ **Ethno pharmacology is distinctly linked to plant use, ethno botany.**

# Ethno pharmacy depends on ethno medicinal plant

**1. Herbal medicine is a triumph of ethno medicine.**

**2. Plants and herbs that have medicinal value are long in use in India.**

**3. Traditional knowledge have to be utilized in this directions.**



# Ethno botany involves studies of the:

1. identification and ethno taxonomy (cognitive categorization) of the (eventual) natural material from which the remedy will be produced (medical **ethno biology: ethno botany or ethno mycology or ethno zoology**)
2. traditional preparation of the pharmaceutical forms (**ethno pharmaceuticals**);
3. bio-evaluation of the pharmacological action of such preparations (**ethno pharmacology**)
4. their clinical effectiveness (**clinical ethno pharmacy**)
5. socio-medical aspects implied in the uses of these pharmaceuticals (medical anthropology/**ethno medicine**).
6. Proper documentation.

# Medicine in hand

- 1. Easy accessibility of ethno medicine.**
- 2. Grow and produce your own medicine.**
- 3. Use herbal plants as vegetables too.**
- 4. Maintain tradition with science.**

Garden Model .....

# Ideas of Herbal Kitchen Garden



## Why *Hygrophila auriculata* and *Paederia foetida* ?

<i>Hygrophila auriculata</i> ( Acanthaceae)	<i>Paederia foetida</i> (Rubiaceae)
<b>Common Name</b> - Kule-khara (Bengali), Kalaso (Konkani), Shrinkhali (Sanskrit), Talim Khana (Marathi), <i>Gokul kanta</i> (Hindi), Nirumuli (Tamil), Voyalchullai (Malayalam), Kokilakshi (Telugu), Kalavankabija (kannada)	<b>Common Name</b> -Ghandhali(Hindi), Bhedai lota(Assameese), Takkeda(Telegu), Gandha prasarini(Sanskrit), Gandal(Bengali), Hiranvel(Marathi), Gandhana (Gujrati), Pinarisangai(Tamil)
<b>Other names:</b> Marsh Babble.	<b>Other name:</b> Chinese fever vine(China) Chinese fever (English name)
Wide adaptability	Wide adaptability
Perennial	Perennial
Locals use as vegetables	Local tribes use them as vegetables.

***Hygrophila auriculata* and *Paederia foetida* in kitchen garden**



***Hygrophila auriculata***



***Paederia foetida***

Grown in Jhansi (U.P) during December when the temperature was 3 degree celsius.

# Distributions

***P. foetida* is native to Bangladesh and southern Bhutan; Cambodia; Taiwan**

**and China (in Hong Kong and Macau, and the provinces of Anhui, Fujian, Gansu , Guangdong, Guangxi, Hainan , Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, Yunnan, Zhejiang);**

**India**

**(in Andhra Pradesh, Arunachal Pradesh, Assam, Manipur , Meghalaya, Mizoram, Nagaland, Sikkim, Telangana , in the northern part of West Bengal, and the Andaman and Nicobar islands);**

**Indonesia; Japan**

**(in Honshu, Kyushu, Shikoku prefectures, as well as in the Ryukyu Islands);**

**Laos; Malaysia; Myanmar; Nepal; the Philippines;**

**Singapore;**

**South Korea; Thailand; and Vietnam.**



## *H. auriculata*

**Distribution: China, Myanmar, Bangladesh, India, Nepal, Sri Lanka, Pakistan and Tropical Africa.**

Reference: [www.medplants.blogspot.in](http://www.medplants.blogspot.in) ; [www.alwaysayurveda.com](http://www.alwaysayurveda.com)

## Ethno medicinal Importance

<i>H. auriculata</i>
Hemapoitic activity
Hepatoprotective
Diuretic
Antidiabetic
Anithelmintic
Antibacterial
Analgesic
Antimotility
Antioxidant

<i>P.foetida</i>
Anti-inflammatory
Antiarthritic
Antihelmintic
Hepatoprotective
Antispasmodic
Anticancerous



## Importance as herbal kitchen garden plant

**Both the plant has wide medicinal values.**

**The ethno medicinal use is quite common in our daily life for day to day use. Described ailments are common to us.**

**So, as both of them should have Important place in our kitchen garden and can be used in often.**



# Materials and Methods

## **CULTIVATION**

**Root slip of *H. auriculata* and *P. foetida* were collected from their natural habitat of South West Bengal during the rainy season and transplanted in the set up herbal kitchen garden at Central India where semi arid climate persist with average rainfall of 850 mm and temperature goes as high as 44 degree C during summer and as low as 2 degree C during winter.**

**Plants grow normally with the application of farm yard manure 1kg/ sq mt.**

**Physical measurements of leaves taken numerically.**

**1. Leave of *H. auriculata* and *P. foetida* were collected, oven dried at 66 degree Celsius followed by grinded**

**2. Analyzed for their proximate compositions (DM, CP, EE, OM etc.-AOAC, 2005)**

**3. Fiber fractions(ADF, NDF-Van Soest et al., 1991)**

**4. Minerals (by Atomic absorption spectrometer)**

[The experiment was performed at central analytical laboratory of I.G.F.R.I (I.C.A.R), Jhansi ].

## Physical properties(cm) of *H. auriculata* and *P. foetida* leaves

Physical measurements of leaf	<i>Hygrophila auriculata</i>	<i>Paederia foetida</i>
Leaf length (cm)	5.49±0.17	6.60 ±0.17
Leaf width(cm)	1.21±0.11	2.98± 0.18
Leaf petiole(cm)	0.49±0.11	1.86±0.19

**Proximate and Fiber compositions (%) of *H. auriculata* and *P. foetida* leaves**

<b>Proximate Composition (%)</b>	<b><i>H. auriculata</i></b>	<b><i>P. foetida</i></b>
<b>DM</b>	16.98	23.04
<b>Hemicellulose</b>	11.48	9.97
<b>Ether extract</b>	12.28	5.95
<b>CP</b>	25.67	13.24
<b>N</b>	4.11	2.12
<b>ADF</b>	16.89	29.30
<b>NDF</b>	28.95	39.32
<b>Ash</b>	20.55	9.93
<b>OM</b>	79.45	90.07
<b>Lignin</b>	4.68	9.81

## Minerals(ppm) in *H auriculata* and *P.foetida* leaves

Minerals (ppm)	<i>H. auriculata</i>	<i>P. foetida</i>
<b>Cu</b>	<b>173.09</b>	<b>129.01</b>
<b>Fe</b>	<b>417.48</b>	<b>271.28</b>
<b>Zn</b>	<b>72.79</b>	<b>41.31</b>
<b>Mn</b>	<b>60.56</b>	<b>34.32</b>



## Significance of results

- 1. Leaves length of both herbs varied between 5.49 to 6.6 cm in length with 1.21-2.98 cm width having **feasible petiole**.**
- 2. leaves have **sufficient biomass** to collected as medicinal use as well as vegetables.**
- 3. Collection of few leaves may serve as **ready to use** herbal medicine.**

**4. Proximate composition revealed that *H. auriculata* had 16.98% DM and *P. foetida* leaves had 23.04% DM. But Crude protein was 25.67% in *H. auriculata* and 13.24 in *P. foetida* leaves. Thus, both the leaves represent a **rich protein source** to be consumed as herbal meat or nonveg. Supplement or for the weak debilitated patients diet.**

**5. *H. auriculata* had 12.28% ether extracted oils which is rich source of different alkaloids with medicinal values. *P. foetida* with 5.95% ether extracted oil is not also behind.**

**6. *H. auriculata* had only 16.89% ADF and 28.95% NDF that proves its **easy digestibility** in our system. *P. foetida* had fiber of 29-39% on DM basis which is less and comparable.**

**7. Both the leaves had high Ash% (9.93- 20.55%) that signifies their high mineral contents though *H auriculata* is well ahead in this regard.**

**Thus, only this simple proximate studies revealed their importance as wonder herbs.**

## Significance of minerals

- ***H. auriculata* leaves is rich source of Cu, Fe, Zn and Mn which signifies its role in haemopoetic activities in body.**

(international journal of Health research.. Vol 2 no.1 2009)

- **Both the leaves have Hepatoprotective roles.**

(Preliminary studies of *hygrophila auriculata* (schum) heine in rats

*S Hussain, N Ahmed, Z Ansari and pubmed.gov.*)

- **Herbs as such is mineral supplement to their native consumers.**

# Views

- **We have lot of Pharmaceutical information's on different plants but here we got such two wonder herbs that could easily be grown in herbal garden.**
- **In the case of wild edible plants, nutritional information is also to be documented.**
- **Most of the indigenous plants are not cultivated, but we can think ahead.**
- **Socio economic importance of these herbs are to be considered as trials are getting those in their diets.**

- **Both the herbs *H.auriculata* and *P.foetida* is rich source of protein and minerals that may support our immunity if we take them in our daily diets.**

***These plant can be grown in other tropical countries and can be utilized for further studies by herbal medicine manufacturers and agronomic department.***

## MY VIEWS

- 1. Herbal drugs can be used to improve our health .**
- 2. Traditional and folkloric ethno medicinal herbs and plants may support our pharma economy.**
- 3. Conservation of herbal plants is important.**



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