

INORGANIC STATUS OF TUBERS OF *HABENARIA LONGICORNICULATA* J.GRAHAM**BHAURAV T. DANGAT, RAJARAM V. GURAV**

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ABSTRACT

Habenaria longicorniculata J.Graham is distributed throughout Western Ghats of peninsular India and Srilanka. Tubers of this terrestrial orchid are used as folk remedy and also eaten by some local tribes. Hence an attempt is done to evaluate mineral composition of this orchid. Mineral analysis was done by following standard method of acid digestion. In present study fourteen minerals are analysed for their content in tubers. Phosphorus is present in higher amount as compare to other minerals while Magnesium is lowest. In case of trace elements Ferrous is found to be higher and Molybdenum is found to be low in quantity. Present study reveals that tubers of this orchid are good source of minerals and they can be used in food preparation by proper processing, results proves that undoubtedly it's a folk medicine. Further study on this and other orchids needs to be carried out to know the full potential in regards of its medicinal value

Keywords: *Habenaria*, folk medicine, minerals, orchidaceae.**INTRODUCTION**

Being one of the largest families of the flowering plants, Orchidaceae constitutes about 7% species of all Angiosperms and nearly 40% of monocotyledons. It is one of the largest and most diversified families of Angiosperms represented by 25,000 to 35,000 species belonging to 600-800 genera distributed in all parts of the world except, in the Antarctica [1-2]. India represents about 1,141 species belonging to 140 genera of orchids with Himalayas as their main home [3]. Mostly grown for ornamental and commercial purpose but they are neglected or less importance is given towards their medicinal value. A lot of research on medicinal properties of *Vanda* has been carried out for medicinal value but unfortunately many orchids escape from the attention of researchers due to their short life cycle and many other factors. There is need in plant medicine research especially in orchids as this is a very huge but much neglected group. Many local tribes use various orchids and their parts as folk remedy to cure various diseases, especially tubers of terrestrial orchids. This knowledge of local tribes may help in developing or finding new drug in medicine and studies on the folk medicines may reduce rate of loss of orchids from nature. By keeping this view, present study is carried out on an interesting and beautiful terrestrial orchid *Habenaria longicorniculata* J.Graham, tubers of which are used in folk medicine.

Genus *Habenaria* Willd. of family Orchidaceae contains mainly terrestrial or lithophytic, rarely epiphytic, tuberous and herbaceous species is represented by about 800 species distributed throughout the world especially tropical and temperate regions of the world. In India it is represented by 72 species including 38 endemic ones. For Western Ghats it is represented by 43 species with 28 endemic species [3]. *Habenaria longicorniculata* J.Graham is the only species among genus *Habenaria* having longest tube like slender nectariferous spur ca.12-20 cm. in length (Fig.1a & b). It is endemic to Western Ghats and characterised by its height, upto 70-80 cm, white colour flowers, long spur, and sweet scent during night time. This terrestrial orchid perpetuate through tubers, having a shape globose to sub-globose with several slender roots (Fig.1c). Since these tubers are used directly or indirectly or used with other plant materials for remedial purpose hence an attempt is carried out to know the mineral content of this tuber.

MATERIALS AND METHODS

Fresh Tubers of *H. longicorniculata* J.Graham were collected from various localities of Kolhapur district in the month of mid September, they were washed with tap water followed by distilled

water, blotted well on blotting paper and used for mineral analysis. For acid digestion each tuber was cut into small pieces and dried at 60°C for about 30 days. Dried tuber pieces were crushed in mortar with the help of pestle and dry powder was used for further analysis. Mineral analysis was done by following acid digestion method [4]. Sodium and Potassium were estimated by flame photometrically following the standard method of flame photometer (Model- Elico, ch-22A), remaining inorganic elements viz. Calcium, Potassium, Magnesium, Iron, Manganese, Zinc, Copper and Cobalt were estimated by using Atomic absorption spectrophotometer (Perkin-Elmer, 3030 A). Total nitrogen content and phosphorus was estimated by following Hawk et al. (1948) and Sekine et al. (1965) method respectively [5-6].

RESULTS AND DISCUSSIONS

Total 14 mineral elements were analysed out of which, major element Phosphorus was highest i.e. 48.65 ± 1.36 % as compared to others, while Magnesium is lowest i.e. 0.02 ± 0.005 %. In minor elements Ferrous shows highest amount i.e. 106.48 ± 1.43 PPM while Molybdenum is present lowest as compare to other mineral elements i.e. 0.06 ± 0.02 PPM.

Table 1: Mineral composition of tubers of *Habenaria longicorniculata* J.Graham

Sr. No.	Parameters	Analysis
1.	Nitrogen %	2.71 ± 0.33
2.	Nitrate N %	0.05 ± 0.01
3.	Phosphorus %	48.65 ± 1.36
4.	Potassium %	1.16 ± 0.06
5.	Calcium %	1.49 ± 0.05
6.	Magnesium %	0.02 ± 0.005
7.	Sulphur %	0.11 ± 0.01
8.	Sodium %	0.53 ± 0.05
9.	Zinc PPM	18.73 ± 1.28
10.	Ferrous PPM	106.48 ± 1.43
11.	Copper PPM	0.09 ± 0.01
12.	Manganese PPM	0.08 ± 0.02
13.	Molybdenum PPM	0.06 ± 0.02
14.	Boron PPM	7.69 ± 0.33

Mean \pm Standard Deviation (SD), triplicates determinations.

Present study reveals that tuber of this orchid are good source of minerals and they can be used in food preparation by proper processing, results proves that undoubtedly it's a folk medicine.

Further study on this and other orchids needs to be carried out to

know the full potential in regards of its medicinal value.

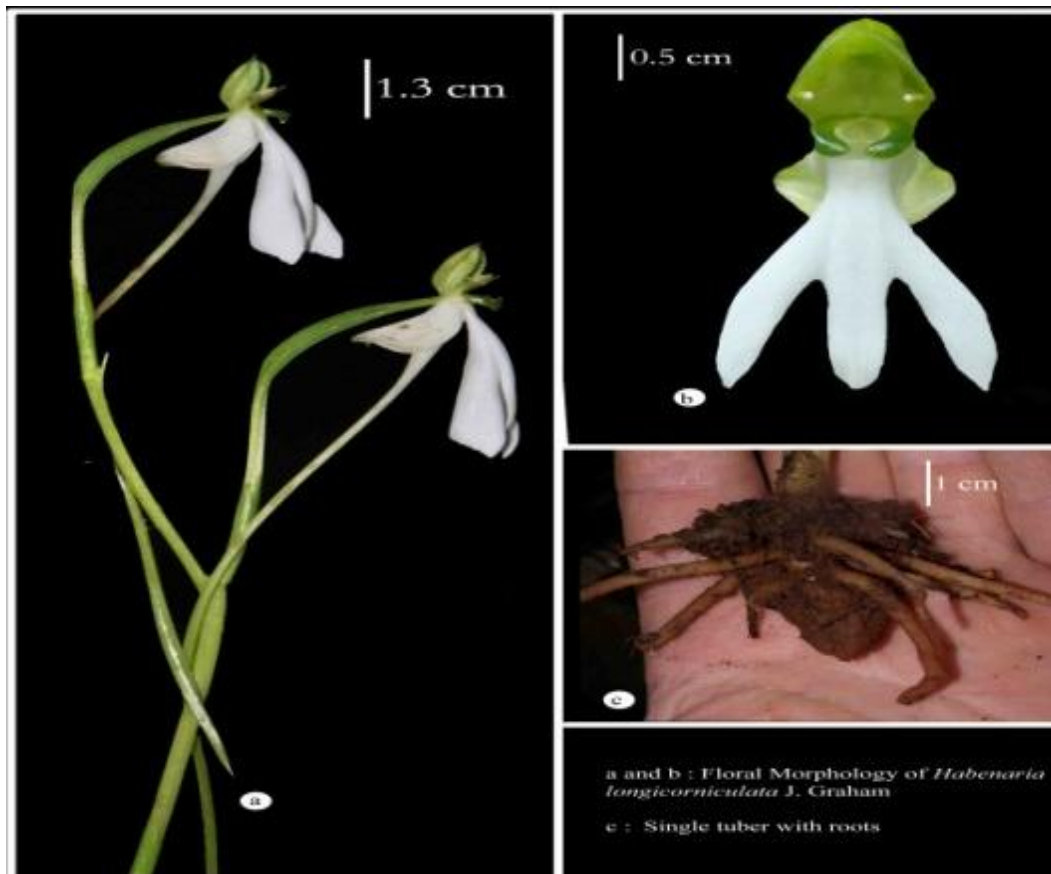


Figure 1: Morphology of *Habenaria longicorniculata* J. Graham

Fig 1: a & b- Floral Morphology of *Habenaria longicorniculata* J. Graham; c- Single tuber with roots.

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