



## Nutritional Evaluation of *Ipomoea alba* L.

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### Abstract

*Ipomoea alba* L.(Convolvulaceae) is a perennial climber and locally known as moon flower or Sakankali. Fresh leaves of *Ipomoea alba* are used as vegetables and also medicines. The leaves of *I.alba* are used as vegetables and also used to cure various diseases in Anjangaon region Dist. Amravati (M.S.). Present study deals with the nutritional evaluation of *Ipomoea alba* leaves .Fresh as well as shade dried material was used for estimation of moisture content, chlorophyll, lycopene, Ascorbic acid, crude protein , crude fat, reducing ,non reducing sugar, and starch. The material was also screened for presence of fifteen different bioactive compounds and showed the presence of alkaloids, flavonoids, Simple phenolics, Anthraquinones, Cardenolides Leucoanthocyanin , saponin ,Anthracene glycosides and polyoses.

**Key Words:** Nutritional evaluation, bioactive compound, *Ipomoea alba* .

### Introduction

*Ipomoea alba* L.(Convolvulaceae) is a perennial climber and locally known as moon flower or Sakankali. Fresh leaves of *Ipomoea alba* are used as vegetables and also medicines. Young leaves and fleshy calyces-cooked, steamed and eaten as a vegetables or used in curries, soups, stews etc. The whole herbs used in treating snakebite<sup>[4]</sup> . Root bark of *I. alba* purgative and leaves used in filariasis. The plant contains pentasaccharide glucoside of ethyl-11-hydroxy hexadecanoate. The seeds contains ipomine and dimethoxyipomine<sup>[7]</sup>. The leaves are used as vegetables and also used to cure various diseases in Anjangaon region Dist. Amravati (M.S.).

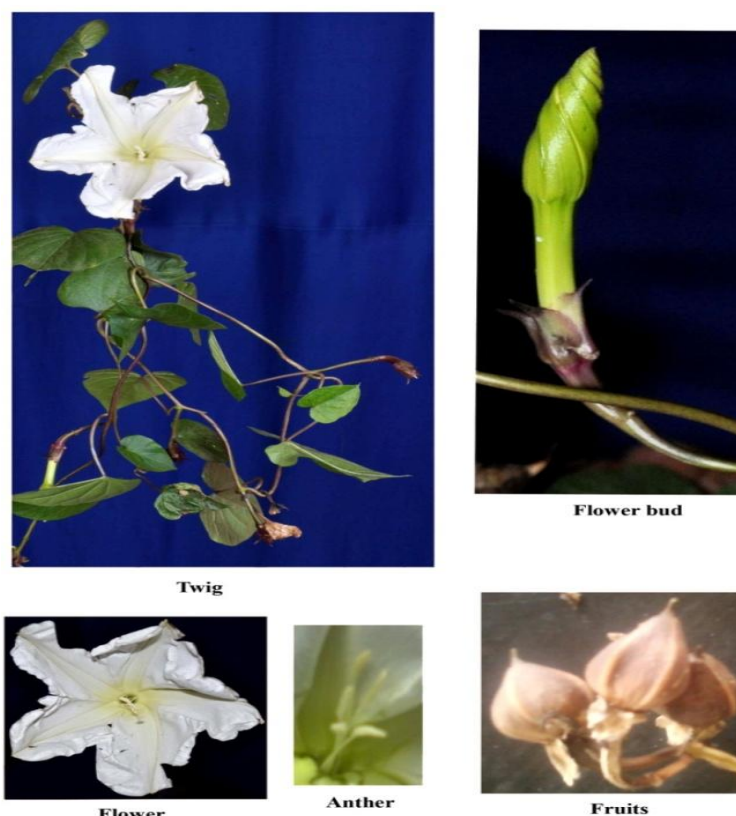


Fig. Twig, Flower bud, Flower and Fruit

### Material and Methods

Plants were collected from field and brought to laboratory; for identification standard floras were referred.<sup>[1,2,8]</sup> . Material was thoroughly washed and surface dried under cool air current. For analysis, fresh material was preserved in zip lock bags at 40 °C; for dry sample material was shade dried and finely powdered and stored in polythene zip lock bags at 30-32 °C in desiccators. Nutritional evaluation was done following Thimmaiah 1999, Sadasivam and Manickam 2005. Dried leaves were used for the detection of bioactive compound was done by standard prescribed method Evans 1997, Harborne 1973, Kokate *et al.*, 1998, Sadasivam and Manikkam, 2005; Thimaiah, 1999, Peach and Tracey, 1955<sup>[3,6,8,10,11,12]</sup> .

## Result and Discussion

The values of nutrients obtained were converted into per 100 gm fresh weight tissue are presented in (Table No.1). Leaves are collected when abundant and are preserved in dry form for scarcity condition. Therefore values per 100 gm weight are also estimated (Table No. 2). The leaf powder was screened for presence of 15 biological compound and presented in (Table No. 3). Screening of material for bioactive compound showed the presence of Alkaloids, Anthraquinones, Cardenolides, Flavonoids, Simple phenolics, Leucoanthocyanin, Saponins, Juglone, Polyoses, Anthracene glycosides etc.

Gopalan *et al.*, (2004) has published nutritive value of some common Indian foods <sup>[5]</sup>. To understand the nutritional status of *Ipomoea alba* studied here, the values obtained are compared with three leafy vegetables commonly used in Indian diet.(Table No. 4).

**Table 1: Nutrients Per 100 gm of fresh tissue**

Sr. No.	Nutrients	Per 100gm
1	Moisture Content	66.45 %
2	Crude Protein	2.25 gm
3	Ascorbic Acid	2.44 mg
4	Lycopene	10.67 mg
5	Chlorophyll	
	i) Chlorophyll-a	9.65 mg
	ii) Chlorophyll-b	12.54 mg
	iii) Total Chlorophyll	22.19 mg
6	Reducing Sugar	3.9 gm
7	Non-Reducing Sugar	8.4 gm
8	Total Phenol	3.9 gm
9	Starch	0.43 gm

**Table 2: Nutrients Per 100gm dry tissue**

Sr. No.	Nutrients	Per 100gm
1	Reducing Sugar	4.2 gm
2	Non-Reducing Sugar	10.2 gm
3	Crude Fat	0.64 %
4	Total Phenol	4.6 gm
5	Crude Protein	3.54 gm
6	Ascorbic Acid	1.36 mg
7	Starch	0.623 gm

**Table 3 : Bioactive Compound**

Sr. No.	Test	Response	Intensity*	Inference
1	Iridoids	Pale Brown colour	--	Absent
2	Alkaloids			
	a) Mayer's Reagent b) Wagner's Reagent	Pale Yellow Brown ppt	-- +++	Absent Present
3	Anthraquinones			
	a) Test a	Reddish Brown	+	Present
	b) Test b	Reddish Brown	--	Absent
	c) Test c	Pale Yellow	--	Absent
4	Cardenolides			
	a) Cardiac glycosides b) 2-deoxy sugar	Pale green Reddish Brown	-- ++	Absent Present
5	Flavonoids			
	a) Shinoda test	Orange	+++	Present
	b) Flavonol test	Brown	++	Present
	c) Flavonol test	Yellow	--	Absent
	d) Flavone, Flavonol, Flavanone test	Crimson	+++	Present
e) Rao & sheshandri test	Pale Yellow	-	Absent	
6	Simple Phenolics			
	Test- a) with FeCl <sub>3</sub>	Deep Green	+++	Hydroquinone/n-naphthonol/catechol
	Test- b) with addition of NaOH	Red Brown	++	B-diketones or B-ketonic ester
	Test- c) Addition of excess FeCl <sub>3</sub>	Yellow	++	Hydroquinone
7	Leucoanthocyanin			
	Test a Test b	Red Colour Dark Green	+ -	Present Absent
8	Steroids Salkowaski	Blackish Yellow	--	Absent
9	Tannin			
	Test a Test b	Pale Green Deep Green	-- --	Absent Absent
10	Saponins Test a	Stable Froath	+++	Present
11	Juglone	Pale Green	++	Present
12	Emodins	Light Green	--	Absent
13	Polyoses	Dark Red	+++	Present
14	Polyuronoides	Violet	--	Absent
15	Anthracene glycosides	Colourless	+	Present

\*Response to various tests were denoted by +, ++ and +++ indicating weak, moderate and strong reaction respectively.

**Table 4: Showing comparison of *Ipomoea alba* with common green vegetable.**

Sr. No.	Phytonutrients	<i>Amaranthus</i>	<i>Fenugreek</i>	<i>Spinach</i>	<i>Ipomoea alba</i>
1	Moisture Content (%)	85 %	86.1 %	92.1 %	66.45 %
2	Protein (gm)	3 gm	4.4 gm	2 gm	2.25 gm
3	Fat (gm)	0.3 gm	0.9 gm	0.7 gm	0.64 gm
4	Ascorbic acid (mg)	33 mg	52 mg	8 mg	2.44 mg

**Common names along with Botanical Names :-** Tandulja (*Amaranthus spinosa* L.), Methi (*Trigonella foenum graecum* L.), Palak (*Spinocia oleracea* L.) Sakankali (*Ipomoea alba* L.)

Protein content is lower than *Amaranthus* and *Fenugreek* and higher than *Spinach*. Moisture content is lower than *Amaranthus*, *Fenugreek* and *Spinach*. Fat content is higher than *Amaranthu* and lower than *Fenugreek* and *Spinach*. Ascorbic acid content is much lower than three leafy vegetables. According to National Research Council (1974). In *Ipomoea batatas* the vitamin 'C' was found more (15.20 mg) than *Ipomoea alba* (1.30 mg).

The presence of Alkaloides and flavonoids posses antitoxic and antioxidant activity. The presence of anthracene glycosides indicates that the plant possess hypoglycemic activity which is in conformation with the opinion of Tuse 2009.

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