

## PARKIA JAVANICA LAMK. OF MIMOSACEAE A LESS KNOWN POD VEGETABLE AND ITS SOCIO-ECONOMIC RELEVANCE IN TRIPURA

SASWATI CHAKRABORTI\*, RABINDRA K. SINHA and SANGRAM SINHA

Cytogenetics & Plant Tissue Culture Laboratory, Department of Life Science, Tripura University, Suryamaninagar – 799 130, Tripura (W), India.

\*Email: chakrabortisas@yahoo.co.in

*Parkia javanica* Lamk. pods are used in many recipes by the different communities of this region. Nutritional value of the pod as non-conventional food vegetable is analyzed in terms of biochemical estimates in two varieties of *P. javanica* recorded in the present study. Comparative biochemical analysis revealed distinct variation among certain characters between the two varieties. The utility of the pods as good source of protein containing low phenolics clearly indicated its significance as important food alternative to rural communities and tribals. Pod value of *P. javanica* and its market demand is also worked out through market survey and found to be highly relevant with socio-economy of the rural poor.

**Keywords :** Market status; *Parkia Javanica*; Recipes; Variety.

### Introduction

Diversified food habit is very common and distinctive feature among the peoples residing in this hilly state Tripura. The state is inhabited by mixed populations of Bengali, Tribal, Manipuri, Muslim and other minor ethnic communities<sup>1</sup>. The available information on the socio-economic life of tribal and other communities clearly suggests the significant role of many unknown or less known plant species used as food and vegetable in their daily diets<sup>2,3</sup>.

*Parkia javanica* Lamk. belonging to the family Mimosaceae is a wild tree legume growing in many rural hilly pockets of Tripura<sup>4</sup>. Pods are used as a source of seed vegetable by the tribals and other communities in this region. It is a seasonal pod vegetable producing mature pods during February to April every year. Present study is aimed to generate detailed information on recipe preparation using *P. javanica* along with its market potential. Comparative nutritional values of two varieties of *P. javanica* are also carried out in terms of biochemical estimates.

### Materials and Methods

Knowledge based information on use and utility of *P. javanica* as food vegetable are generated through visit and interaction with Tribals and Manipuri communities residing in different rural areas of Tripura. The details of indigenous food preparation methods used in different recipes are recorded and described. During the course of present study two varietal form of *P. javanica* is also

recorded in terms of pod size. Accordingly, pod potential of the two varieties was analyzed biochemically. Biochemical analysis was carried out with semi boiled condition of the pods. Semi boiling condition was carried out through boiling the scrapped pods in pieces for a period of 15 -20 minutes. The upper epidermal skin layer was removed and the inner soft flesh and seed cotyledons were used in many recipes. Estimation of biochemical characters like protein, soluble sugar, total phenolics, ascorbic acid as vitamin C, titrable acidity, moisture content were carried out following standard biochemical methods respectively<sup>5-10</sup>.

The market status and potentialities of the *P. javanica* pod as food vegetable was recorded through market survey. Survey was made through frequent visit and interaction with whole seller, retail seller and van door seller in different markets and places of the state. Market data thus obtained was recorded and analyzed suitably.

### Results and Discussion

During the course of ethnobotanical studies and frequent visit to different localities, *P. javanica* was found to grow wild in many rural areas of the state. The species is commonly known as 'Monkey rice' and was found to have good demand as vegetable food among the Tribals and Manipurians. Locally, the pod is called 'Owakere buthai' by the Tribals, 'Yongchak' by the Manipurians and 'Sapota' by the Bengali. The plant was found to be distributed in dispersed condition in hilly rural areas without any organized cultivation.

**Table 1.** Some of the food recipes of *P. javanica* recorded and documented.

Name of the recipe	Plant part used	Ingredients	Mode of preparation
Gudak / Eromba / Varta	Mature pod	Semi boiled or roasted pods of <i>P. javanica</i> , boiled potato, boiled chili, chopped leaves of <i>Houttuynia cordata</i> Thunb., roasted oily dry fish <i>Puntius ticto</i> Hem. adequate salt, water	Roasted <i>P. ticto</i> , boiled chilies and potato's are mixed and pasted together. Then semi boiled pods in pieces with adequate amount of salt and water are mixed together. Finally chopped leaves of <i>H. cordata</i> are added for flavor.
Singju (a very fine form of salad)	Flower/very young pods	Flower/young pods of <i>P. javanica</i> , leaves of <i>H. cordata</i> , green papaya, dry fish, red chili powder, salt, carrot, leaves of <i>Eryngium foetidum</i>	All the vegetables including the flowers/ young pods of <i>P. javanica</i> are sliced into very fine form. Excess water if any in the vegetables is taken out by giving a pressure in a cloth container. After removing water, sliced vegetables are spread out in a dish and kept in sun light for a while. Such dried vegetables are mixed together along with adequate amount of salt and red chili powder. The preparation as such in green form is served.
Bora (Pakora)	Flowers	Fertile flowers of <i>P. javanica</i> , chopped onion, pulse powder, chopped green chili, oil, salt to taste	Flowers of <i>P. javanica</i> , chopped onion, chopped green chili, pulse powder, adequate salt are mixed together with water to make a good paste. Finally certain quantum of paste are dropped in hot oil and fried.
Seed fry	Dry Seeds	Seed coat free seed, oil, salt, turmeric powder	Dry seeds are cut into half and soaked in water for overnight. Water is drained off and seeds are mixed with salt and turmeric powder. Then seeds are fried in hot oil.

Fertile flowers, very young pods, mature pods and seeds of *P. javanica* are used as major ingredient in several Tribal and Manipuri recipes. Flowers and young pods are used as fresh while mature pods are used either as roasted or as semi boiled condition for consumption. Different recipes recorded and documented are presented in Table 1. The recipes used by the tribals and other communities are unique and this know-how information so generated and documented could be of great significance in exploring such knowledge for the common people.

In the present study two varietal form of *P.*

*javanica* namely, 'Dwarf' and 'Long' were recorded and documented (Table 2). Dwarf variety was characterized by very short and straight pods with narrow compacted seed distribution while, long variety was relatively long, wide and less compaction of seed distribution. Mature green pods were used for different biochemical estimates for each variety. Semi boiled pod flesh along with seed cotyledons were used as samples for the present biochemical analysis. Analysis at varietal level clearly revealed variation in some biochemical characters (Table 2). Higher protein value and the total soluble sugar content with lower phenolics and ascorbic acid was recorded in

**Table 2.** Comparative pod morphological and some biochemical characters of long and dwarf varieties of *P. javanica* Lamk. growing wild in Tripura.

Morphological parameters						*Mean ± SD of Biochemical Parameters expressed in mg/g fr. wt.				
Variety	Weight of pod (gm)	Length (cm)	Breadth (cm)	No. of Seeds	Moisture content (%)	Protein	Phenol	Sugar	Ascorbic acid	Titrate acidity
Long	77.75	44.00	3.8	15	67.75	34.8 ± 1.35	**0.79 ± 0.06	23.39 ± 0.34	**1.63 ± 0.05	0.20 ± 0.01
Dwarf *	35.80	36.50	2.5	15	70.47	**81.02 ± 1.14	0.29 ± 0.05	**28.32 ± 0.90	0.81 ± 0.01	0.21 ± 0.01

\* Mean of 5 replications; \*\* Very highly significant at  $p \geq 0.05$

**Table 3.** Economic status of *P. javanica* pods in retail and van door markets in urban area of West Tripura District during seasonal pod production (February to April, 2006).

Retail market value *Mean ± SD					Van door market value **Mean ± SD			
Name of market surveyed	No. of retail seller visited	No. of bunch of four pods sold per day	Rate of pod per bunch (Rs.)	Total selling price per day (Rs.)	Name of local village surveyed	No. of pods sold per household per day	Rate of per pod (Rs.)	Total selling price per day (Rs.)
Lake chowmohani bazaar	1	44.0±9.95	5.2±0.4	224.0±25.95	South Dhaleswar	22.4±7.84	1.15±0.12	25.8±9.20
Math chowmohani bazaar	1	30.0±7.21	5.0±0.8	150.0±8.50	Kalyani	19.2±2.97	1.05±0.10	20.0±2.53
Bardowali bazaar	1	35.0±5.52	4.6±0.8	178.0±12.50	Abhoynagar	24.0±9.80	1.15±0.12	26.6±9.75

\*Mean of 10 separate days of observations

\*\*Mean of 5 household records

**Table 4.** Socio-economical relevance of *P. javanica* pods production and marketing.

*Mean± SD				
Pod production per tree	Whole sale rate of pods in bulk per tree (Rs.)	Retail selling price of pods per day (Rs.)	Miscellaneous cost (including transportation charges) (Rs.)	Net profit of a retail seller per day (Rs.)
688.0±35.80	53.0±4.0	176.0±38.78	25.0±3.16	98.0±39.43

\*Mean of 5 replications

dwarf variety. In contrast, high phenolics and ascorbic acid contents were recorded in case of long variety. The difference in protein value between the two varieties is highly significant ( $p = 0.05$ ). Estimation of titrable acidity and moisture content did not differ much between the two varieties. Higher protein value ( $81.02 \pm 1.14$  mg/g fr. wt.) as recorded in the present dwarf variety clearly suggests its superiority over long variety and could be an useful alternative source of protein containing low phenolics.

Market potential of the *P. javanica* pods and its economy with the pod production and selling were studied. Market survey clearly indicated that one retail seller can sell as many as 120 – 160 pods per day at an average cost of Rs. 1.25 per pod. Total selling price of pods was found to vary from Rs. 150.00 – 224.00 per day in retail markets whereas; in van door market it was Rs. 72.00. The net profit of a retail seller during peak season was Rs.  $98.00 \pm 39.43$  per day indicating its market potential (Table 3–4). Therefore, the status of economy of this seed vegetable so generated in the present study could be helpful to explore socio-economic potentiality of *P. javanica* pod production and selling as an alternative source of income to the rural common people of the state. Present work also highlights on less known *P. javanica* pod growing wild in the state in terms of nutritional and economic point of view. This could be useful in economic upliftment of the rural poor residing in this North Eastern region.

#### Acknowledgements

S. Chakraborti is highly grateful to Department of Science and Technology, New Delhi for financial support under Women Scientist Societal Programme.

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