

**NUTRACEUTICAL STUDIES ON *PASSIFLORA EDULIS* – PASSION FRUIT****V. N. ARIHARAN^{*1}, V. N. MEENA DEVI² AND P. NAGENDRA PRASAD¹**

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ABSTRACT

An ethno botanical survey was conducted in order to explore the ethno medicinal plants used by the Kani tribal people in Pechipparai forest range (Southern western Ghats) in Kanyakumari District of Tamilnadu, South India. During the survey, the author's documented 15 plants belong to eight different families which are having fruits with medicinal and nutritional value. *Passiflora edulis* is one which looks like an ornamental plant but the fruits are having high medicinal values. It also contains high amount of vitamin C in the fruits. The fruit is used as a heart tonic, digestive stimulant, body cooling, anti-asthmatic, bronchitis, diuretic and anti oxidant. The nutrabolic content, the medicinal uses and the cultivation methods are given in this communication.

KEYWORDS : Ethno botany, Nutraceutical, vitamin c, calcium

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INTRODUCTION

Passiflora edulis is a tendril climber belongs to the family Passifloraceae grows to a length of 10 meters with many side branches. It grows up to an altitude of 2000 feet¹. It usually climbs

on other tall trees nearby². But in Kani settlements it is grown in pandals or in the fences as a climber. In some areas it is spread over the small huts which are thatched by



Figure 1
Flower and Fruits

wild grass Nanal. The leaves are lanceolate and somewhat thick and shiny. The flowers are colorful showy and auxiliary in position³. The fruits are yellow when ripen with a maximum size of a lemon (Figure 1). The pulp inside the fruits is light yellowish orange in color with a pleasant odor. When the fruits are hanging down from the branches, it looks very ornamental⁴. The seeds are blackish brown in color. The fruits are eaten by squirrels, parrots and bats.

MATERIALS AND METHODS

Ethno botanical information's were collected from the tribal people by simple questioner method. The plant samples were collected from the Kani settlements of Pechipparai forest near Zero point regions. Estimation of calcium and magnesium was done according to Bogel by using Eriochrome Black T as an indicator. Glucose was estimated by using Fehlings reagent method. Estimation of iron was done by calorimetric method using ferric ammonium sulphate and ammonium thiocyanate method. Phosphrous was estimated by calorimetric method using ammonium molibidate and Stanus chloride method. Estimation of protein was estimated by using Biuret method. Estimation of vitamin C was done by using dye

method by using 2,6 dichloro phenol indo phenol dye. The physical parameters were estimated by using Systronics water analyzer kit. Chemical properties were analyzed by standard analytical method.

RESULT

Ethno botanical studies

Even though *Passiflora* is an exotic fruit, the Kani people are well versed with the usage of this fruit. They grow this plant in their garden. The rind of the fruit is cut into small pieces and made in to a paste and applied on the skin for Sun burn during the summer season. The inner part of the skin is used as a remedy for skin itching, skin eruption and scabies. The fruit pulp is scoped, crushed and filtered through a nice cloth or sieve to get the fresh juice. Like lemon 5 ml of the juice is mixed with 500 ml of water and either sugar or honey is added for the sweetening. This diluted juice is taken in for dysentery. This juice is taken as a health tonic in the morning and evening. It cools the body and removes the eye irritation. This juice mixed with honey is a very good remedy for cough. It also removes irritative sensation in the lower part of the bronchial tract and abdominal region. *Passiflora edulis* is a climber originated in Brazil. Passion fruit has

long history of popularity and extensive cultivation starting in the late 19th century when it was introduced to Hawaii in 1880. It quickly become a house hold word “a glass a day is sure to give a renewed passion for life” at the turn of the 21st century. Hawaii is the country with maximum per-capita consumption of passion fruit juice in North America. Today the passion fruit is grown nearly everywhere in the tropical belt of South America to Australia, Asia and Africa. The commercial plantations are commonly found in California (USA). South America is currently the largest producers of passion fruit worldwide. It is followed by Australia and Newlands in export of the fruit to the other countries⁵. For several years, India has enjoyed a moderate harvest of of passion fruit in the Nilgiris in the south and in various parts of north India, especially in Himachal Pradesh. In north east India it is cultivated in the clean and pollution free hills of Manipur,

Nagaland, Mizoram and Meghalaya. In India especially in South it was introduced by the British people in 19th century. During the period the Britishers in India employed these Kani people and they acquired the knowledge of the cultivation and use a medicine.

Phytochemical studies

In the present study the phytochemical analysis of the fruit pulp were carried out to find out the nutrabolic content. This oil also extracted from the seeds .The nutrabolic estimation mainly the glucose, fat, vitamin c, magnesium, sodium, calcium, iron was carried out by using the standard laboratory methods and the results were tabulated in table 1. The fatty acid content of seed was estimated by using solvent extraction method. The physico chemical characteristic of the oil was carried out and the values are given in table 2.

Tables 1
Nutrabolic content of passion fruit pulp

S.No	Compound	Content (mg/100g)
1	Calcium	12
2	Magnesium	29
3	Iron	2.1
4	Vitamin C	16.2
5	Glucose	18.1
6	Protein	5.1
7	Fat	Trace
8	Phosphorus	2

Table 2
Physiochemical characters of passion fruit seed oil

S.No	Physical properties	Value
1	pH	4.3
2	Density	1.14
3	Specific gravity	0.89
4	Viscosity	4.2
5	Salinity	0
6	Conductivity	10.5
7	Total Dissolved Solid	0.25
Chemical Properties		
1	Acid value	0.74
2	Iodine value	108.57
3	Saponification Number	289.96
4	Average molecular weight	187.02
5	Cetane number	55.82

CONCLUSION

Passion fruit originated in Brazil and it was brought to India by Portuguese due to its high

nutrobolic content. The passion fruit contains high amount of vitamin A, vitamin C,

potassium, calcium, iron, phosphorus, magnesium. It also contains the high nutritive value like glucose, protein and a trace amount of fat. The seed of passion fruit contains a substantial amount of fatty acids nearly 24% on dry weight basis. The knowledge of usage and cultivation of this passion fruit was acquired from the Britishers by the Kani tribal's in the Agasthiyamalai bio reserve forest area because of their close association with the British high commanders. The oil content which is found in the seeds could use as a source for biofuel. The physico chemical properties of the pure oil were analyzed and it was found suitable for the use as a biofuel when compared to the ASTM standards. So the fruit pulp can be used as energy source for human and the seed oil could be used as alternative energy source for diesel engines. Moreover the passion fruit cultivation is highly possible and productive in the unpolluted area of South Western Ghats which can be eco friendly. It is

highly economic and it will certainly give economic growth in the tribal and rural people. There is lot of companies waiting for the raw material for the manufacturing of natural drinks for local use and even for export. In fact the cultivation of this passion fruit will improve the socio economic status of the tribal people and the rural mass.

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