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Phytochemical and nutritional studies on the fruit pulp extract of *Passiflora foetida* Linn.

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Abstract

Preliminary phytochemical analysis of *Passiflora foetida* Linn. proved that it consist of phytochemicals such as carbohydrates, protein, fat, reducing sugar, ascorbic acid, flavonoids, alkaloid, phosphorous, magnesium, calcium, amino acid, cholesterol and phenolic compounds. Presence of this biochemicals proved that this plant has high medicinal value and low level of toxicity. This study leads to the conservation of this plant. It has both economical and nutraceutical value.

Keywords: *Passiflora foetida* Linn., striking passion flower, phytoconstituents

Introduction

Medicinal plants are an important part of our natural wealth. They serve as manufacturing numerous traditional and modern medicines. The history of medicinal plant use for treating diseases and ailments is probably dates back to the beginning of human civilization. Our forefathers were compelled to use any natural substance that they could find to ease their sufferings caused by acute and chronic illness, physical discomforts, wound and injuries. Hippocrates (460-377BC) the well recognized father of modern medicine stated "Let food be thy medicine and medicine be thy food".

Phyto constituents and are responsible for protecting the plant against microbial infections or infestations by pests (Doughari, 2012) [5]. The study of natural products on the other hand is called phyto chemistry. Phytochemistry or plant chemistry concerned with the enormous variety of organic substances that are accumulated by plants and deals with the chemical structures of these substance, their biosynthesis, turnover and metabolism, their natural distribution and their biological function (J.B. Harborne, 1980) [6].

Plants from this genus known to contain various active principles of therapeutic value and possess biological activity against a number of diseases.

Passiflora foetida Linn.

Passiflora foetida Linn. popularly known as striking passion flower, is belongs to the family passifloraceae. Commonly called Mupparisavalli in Tamil and Poochapazham in Malayalam. Several have edible fruits and attractive flowers.

Medicinal use of *Passiflora Foetida* Linn.

Passiflora foetida Linn. used to travel vomiting, echema, and chronic ulcer. Leaves of the plant utilized as folk medicine for treatment of anti-anxiety, stress and insomnia. It is also useful for the treatment of hysteria, skin inflammation, cough and fever. Chemical constituents in *Passiflora foetida* Linn. include hydrocyanic acid, groups of flavonoids and Harman alkaloids. In the Asia Continent, the leaves decoction of this plant is used to treat asthma, biousness, hysteria whereas in America, Brazilians use the herbs in the form of lotions or poultices for erysipelas and skin diseases with inflammation (Dhawan *et al.* 2004) [4]. Some pharmacological properties of *Passiflora foetida* Linn. have been studied. It is found to have anti-parasite, anti-bacterial antifungal and antioxidant activities (Rasool *et al.*, 2011) [7]. Furthermore, this plant exhibited hepato-protective, anti-depressant, anti-carcinogenic, analgesic and anti-inflammatory properties (Balasubramaniam *et al.* 2010) [2]. The use of *Passiflora foetida* Linn. in the treatment of women infertility suggests that this plant

Taxonomic Identification

The botanical identity of plant study authenticated by a taxonomic expert. Plant was identified by herbarium visits and literature could have some estrogenic properties. At present phytochemistry has been developed as a distinctive discipline and has wider application in every field of life science.

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Phytochemical study on the fruit pulp of *Passiflora foetida* Linn. is relevant and significant phytochemical methods are obviously essential in all chemical and biochemical studies even in disciplines so remote from the chemical laboratory as systematics, phytogeography, ecology and paleobotany. In that sense phytochemical studies open a new avenue for future research. The overuse of synthetic drugs with impurities resulting in higher incidence of adverse drug reaction, has motivated mankind to go back to nature for safe remedies. A number of modern drugs have been isolated from natural sources and many of these isolations were based on the uses of the agents in the traditional medicine. Hence in this context researcher decided to go for the crude fruit extract of *Passiflora foetida* Linn.

We know plants have been used for food and medicinal purposes for centuries and this knowledge have been passed from one generation to next generation. This is particularly evident in the rural areas where infectious disease are endemic and modern healthcare facilities are few and far thus compelling the people to nurse their ailments using local medicinal plants. Though herbs are relatively safe to use their combined use with Orthodox drugs should be done with extreme caution.

2. Materials and Methods

Collection of Plant Materials

The fruits of *Passiflora foetida* Linn. were collected from the road side thickets of Pathirapally, Alappuzha survey. A voucher specimen is preserved in our department.

Phytochemical analysis

Fruits were taken as study material. Fresh fruits were collected for the study. The fruit pulp extract was taken for preliminary screening to identify the phyto constituents present in the sample. In preliminary investigation sample screened for the presence of phytochemicals like carbohydrates, protein, fat, cholesterol, reducing sugar, alkaloid, flavonoid, phenol, ascorbic acid, calcium, magnesium, phosphorous, etc. The phytochemical screening the methanolic extract of fruit pulp of *Passiflora foetida*. Linn was performed according to standard literature methods in which the extracts were exposed to different reagents to identify the primary metabolites.

2.1 Estimation of Protein

Pipette out 0.1ml and 0.2 ml of the sample extract on 2 test tubes. A tube with 1 ml of water as a blank. Add 5 ml of copper solution. Mix well and add 0.5 ml of folin reagent.

2.2 Determination of Phosphorous

Take 1 ml of the extract and make up 4 ml with distilled water. Add 4 ml of reagent C (6N H₂SO₄, distilled water, Ascorbic Acid, H₂₄Mo₇N₆O₂₄). Incubate at 37°C water bath.

Read absorbance at 820 nm.

2.3 Determination of Calcium

Take 5 ml extract in a centrifuge tube. Add 5 ml of ammonium oxalate and 3 drops ammonia solution. Centrifuge at 300rpm. Decant the supernatant and add 0.5 ml perchloric acid. Heat for 1 min in a boiling water bath.

have been associated with antidiarrhoeal action. Therefore the presence of individual or combinations of flavonoids and alkaloids may give the fruit extract its possible antinociceptive and anti inflammatory effects. Alkaloids as well as flavanoids may also be accountable for the anti diarrheal action of *Passiflora foetida* Linn. (Asadujman, *et al.*, 2014) [1].

2.4 Estimation of Amino Acid.

To 10ml of extract, add 1 ml of ninhydrin solution. Make up to 2ml with distilled water. Heat for 20 minutes in a boiling water bath. Add 5 ml diluents. After 15 min read the intensity of purple colour against a reagent blank.

2.5 Estimation of fat

(Cox. H.E & Pearson.D.1962) [3] Dissolve sample in 50ml of neutral solvent in a 250ml conical flask and few drops of phenolphthalein was added. This was titrated against 0.1 N KOH until pink colour develops.

2.6 Estimation of flavonoid

0.5ml extract is diluted with 3.5ml of distilled water and 0.3ml sodium nitrate was passed to the tubes. Add 2 ml of sodium hydroxide. Then the content of the reaction mixture were diluted with 204ml of distilled water.

2.7 Estimation of reducing sugar

Pipette out 3ml of the extract and add 3ml of DNS reagent. Heat the contents in a boiling water bath. Add 1 ml of Rochelle salt solution. Read absorbance at 510 nm.

3. Result and Discussion

The present study of preliminary phyto-chemical analysis showed the presence of alkaloids, flavonoids, proteins, cholesterol tannins, carbohydrates, fat, amino acid and phenol. The fruit also contained appreciable amount of minerals such as Calcium, Magnesium, Phosphorus etc. It has been reported that alkaloids and flavonoids were responsible for the anti-inflammatory and antinociceptive activity of Prostaglandin synthetase inhibition. Therefore anti-inflammatory and antino- ciceptive activity of the fruit extract may be attributable to the existence of *Alkaloids foetida* Linn. Plant extracts: biological and pharmacological activities. J Integr Med. 2014; 12(2):121-126. and flavonoids either in single form or in combination. Furthermore, presence of.

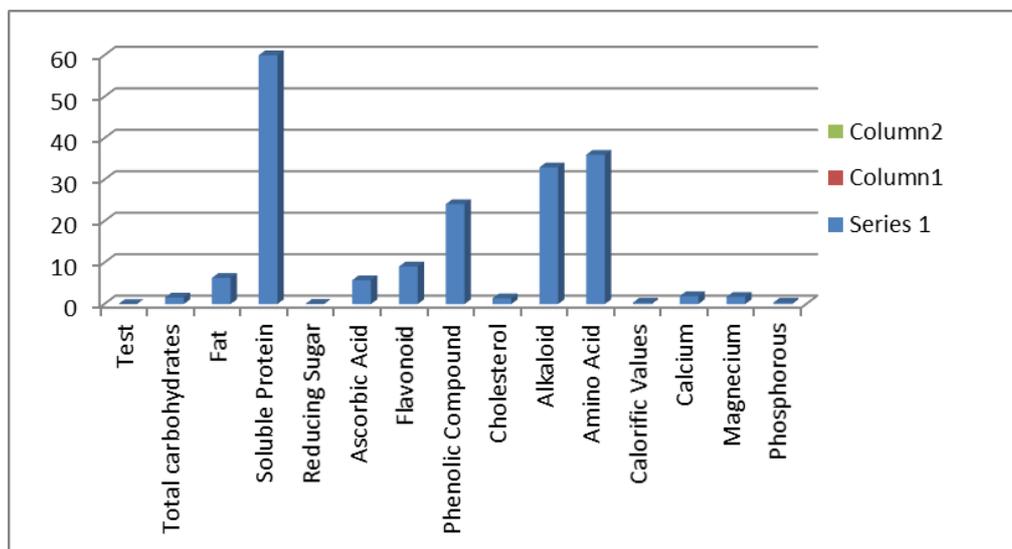


Fig 1: The present study of preliminary phyto-chemical analysis showed the presence of alkaloids, flavonoids, proteins, cholesterol tannins, carbohydrates, fat, amino acid and phenol

Table 1. Passion floiidea

Test	Concentration
Total carbohydrates	1.6mg/g
Fat	6.3mg /g
Soluble Protein	60mg/g
Reducing Sugar	0.041mg/g
Ascorbic Acid	5.77mg/g
Flavonoid	9.066mg/g
Phenolic Compound	24.1mg/g
Cholesterol	1.4mg/g
Alkaloid	32.96mg/g
Amino Acid	36mg/g
Calorific Values	0.360calories/ g
Calcium	1923 mg/kg
Magnesium	1749 mg/kg
Phosphorous	0.35mg/g

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