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Natural movement and therapeutic different bioactive constituents and biochemical composition of (*Carica papaya* L.)

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Abstract
Papaya (*Carica papaya Linn*.) is generally known for its food and health benefits all through the world. The restorative properties of *papaya* leafy foods parts of the plant are additionally notable in customary arrangement of medication. Since, each piece of *papaya* tree has financial worth; it is developed on business scale. During the most recent couple of many years extensive advancement has been accomplished with respect to the natural movement and therapeutic use of *papaya* and now it is considered as significant nutraceutical organic product plant. Phytochemical analysis of *papaya* leaves in presence of absences in natural for different modern and drug items for different illnesses. The fluorescence analysis presence of chemical nature. Inorganic elements iron concentration high levels and physicochemical parameters maximum Ash value 11.2% and Minimum value Sulphated Ash 9.2%. Medicinal *papaya* leaf powdered and products thereof are used in many countries in the treatment and management of diabetes. In the current survey dietary benefit of the foods grown from the ground properties of its different parts have been examined to give aggregate data on this multipurpose business organic product crop.

Keywords: *Carica papaya l*, fluorescence, phytochemical, physico-chemical analysis.

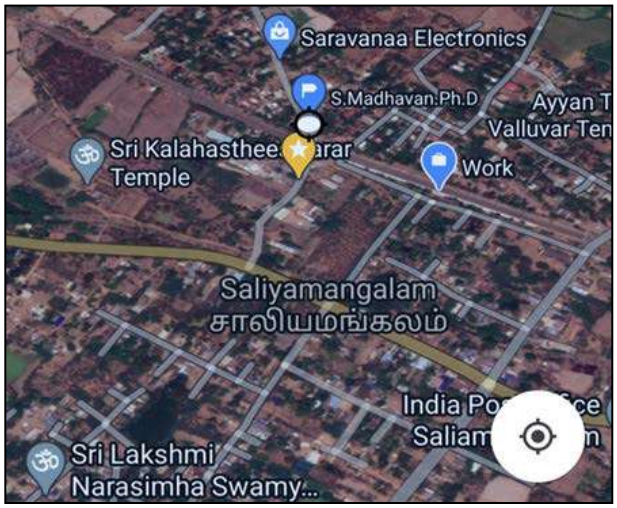
Introduction

Carica papaya L., is a herbaceous plant with conspicuous leaves (20-60 cm long), and is an individual from the Caricaceae family, native to the tropical area of Mexico, Central America and northern South America. *C. papaya* is conveyed all through the jungles and subtropics where it is widely developed [1]. The portrayed metabolites from the plant are chitinase, glutaminyl cyclase and cysteine end peptidases of class-II and III from Carica latex. Linalool in organic product mash, and alkaloids, for example, carpaine, pseudocarpaine, dehydrocarpaine I and II and kaempferol and quercetin in the leaves. Then again, there are reports that depict the remedial impact of *C. papaya* leaf on dengue and intestinal sickness and as calming. Different reports propose that an aged *papaya* readiness altogether lessens plasma glucose levels in sound subjects and in patients with type 2 diabetes [2]. The hypoglycemic exercises of *Carica papaya* have been recently depicted for its leafy foods by and by, the accessible data with respect to the leaves is inadequate. Phytochemicals simply refer to chemicals that are found in plants [3]. It is terms that are broadly used to describe chemical constituents of plants that differ from the normal nutrients [4]. These phytochemicals work in several ways which differ from one another depending on the functional group present in the chemical. Some are effective as free radical scavengers while some have anti-bacterial, anti-viral, anti-fungal and anti-inflammatory activity [5]. Notably among these phytochemicals are phenolic compounds flavonoids, alkaloids, tannins, saponins, cardiac glycosides, steroids, quinines and terpenoids soon with further sub-classes. Phytochemical studies on the plant's extracts revealed and justified the local use of the plants in the treatment of diseases [6]. As a consequence of the ethno-botanical survey, many species of plants and herbs with wound healing activities have been identified in Africa and other developing countries. The use of medicinal plants in wound management and care involves disinfection, debridement and the provision of adequate environment for the natural healing process [7, 11]. Diabetes is characterized by metabolic dysregulation primarily of insulin secretion, impaired insulin action or both. This review mentioned healthful plant species from Bharat and showed that they need anti-diabetic activity. Also, many of these species have phenolic content, phytosterols, saponins and flavonoids [12, 13]. Over the centuries, Indian herbal drugs have served as a major source of medicines for the prevention and treatment of many diseases including Ethno botany embraces a complex relationship between plants, people and culture and this relationship between plants and human cultures is not limited to the use of plants for food, clothing and shelter but also includes their use for religious ceremonies, ornamentation and health care.

Material Methods

Plant Collection

The fresh leaves of *Carica papaya. L* were collected from Saliyamangalam, Thanjavur District, Tamil Nadu, India.



Map 1: Study area

Plant material

The *Carica papaya. L* leaves was dried up under shade, crude powder.

Phytochemical Studies

Carica papaya Secondary metabolites in the present studies presence of medicinally active constituents. Beneficial drugs and to improve the patient health.

Preparation of extracts

The powdered plant samples of rhizome (100 g) were used for successive solvent extraction (500ml) with increasing order of polarities like ethanol, methanol, water, chloroform, ethyl acetate and petroleum ether. At with the aim of indicate it is reserved in an orbital shaker at 190-220rpm for 48 hours. The supernatant was collected, filtered through Whatman No.1filter paper and the extract were concentrated by a Rotary flask evaporator at a specific temperature was used based on the solvent system. Each time previous to extract through the next solvent the remains was dried thoroughly to remove the solvent used. The acquired dried concentrate was then precisely gauged, put away in little vials at - 20°C and utilized for the accompanying examinations.

Phytochemical screening

The preliminary phytochemical evaluation was carried out by using standard procedure [14, 15].

Qualitative analysis of Inorganic elements

Ash of drug material (500mg) was ready and treated with HNO3 and HCl (3:1 v/v) for one hour. After the filtration, the filtrate was used to perform the following tests [14, 15].

Determination of Fluorescence

Fluorescence behavior of leaves powder *Carica papaya. L* when physical and chemical parameters square measure inadequate because it usually happens with the pulverized medicine the material could also be known from their adulterants on the basis of the visible light study. The Behaviour of the rhizome of *Carica papaya. L* with different chemical reagents such as Aluminum chloride, sulphuric acid, hydrochloric acid, Ammonia, chloroform, Sodium hydroxide and nitric acid was performed to observe the prevalence of phytoconstituents at the side of color changes. The powders were observed in normal daylight and under short (254nm) and long U.V. light (365 nm).

Physico-chemical analysis

Air-dried *Carica papaya. L* was used for the quantitative determination of ash values, extractive values, moisture content, swelling index, foaming index and foreign organic matter, via standard methods [16]. The total Ash value for a crude drug is not always reliable since there is a possibility of the presence of non-physiological substances such as earthy matters. Along these lines, the parameters, for example, corrosive insoluble, water-solvent and sulphated debris esteems were performed. Extractive values with petroleum ether, chloroform, ethyl acetate, ethanol, methanol and water were also determined. Fluorescence analysis of brown seaweed powdered and various extracts was carried out by the standard method.

Result and Discussion

Preliminary phytochemical screening

Phytochemical investigation of *Carica papaya L., Caricaceae*, leaf remove, the presence of flavonoids, tannins, alkaloids and natural acids in a aqueous separate has been recently archived. As indicated by the principle intensifies contained by *C. papaya* leaves are phenolic acids, just as follow measures of chlorogenic corrosive, contrasted with flavonoids and coumarin compounds. In their examination, the creators recommended that the presence of such phenolic and coumarin compounds in *C. papaya* leaves could somewhat clarify the pharmacological properties of this plant. Diverse bioactive phytochemicals found in *C. papaya* contain a large capacity of natural exercises that can be of significant remedial list. Be that as it may, the absence or presence of metabolites strength is because of contrast in extremity of the solvents utilized for the extraction [17]. The consequences of the examination of *C. papaya* leaves demonstrated that ethanol remove contains an incredible extent of steroids, quinones, tannins and alkaloids. Nonetheless, the pharmacological exercises of *C. papaya* leaves can't be resolved exclusively by the consequence of the phytochemical examination. A portion of these phytocomponents are liable for the hypoglycemic and hypolipemic impact in diabetic rodents.

Table 1: Qualitative analysis of Phytochemicals analysis *Carica papaya. L leaves* extract

S. No	Analysed Phytochemicals factor	Aqueous	Ethanol
1.	Tannin	++	+
2.	Saponin	+	+
3.	Flavonoids	++	-
4.	Steroids	+	-
5.	Alkaloids	++	+
6.	Polyphenol	++	-

Indications: "+" means positive activity, "-" means negative activity

Every constituent plays an important role and deficiency of any one constituent may lead to abnormal developments in the body [12].

Qualitative analysis of Inorganic elements

All personalities need a variety of advanced organic/inorganic compounds in the diet to satisfy the requirement for his or her activities. The vital constituents of diet square measure carbohydrates, fats, proteins, vitamins, minerals and water. Every constituent plays an important role and deficiency of anyone's constituent may lead to abnormal developments in the body [18]. Plants are the wealthy supply of all the weather essential for the citizenry.

Minerals square measure inorganic substances, gift altogether body tissues and fluids and their presence are critical for the upkeep of sure chemistry processes that square measure essential to life. Minerals are chemical constituents utilized by the body in some ways. Every style of living matter needs these inorganic parts or minerals for his or her traditional life processes. Minerals could also be loosely classified as a macro (major) or small (trace) parts. The third category is the ultra-trace elements.

Table 2: Qualitative analysis of Inorganic elements analysis of *Carica papaya. L leaves* extract

S. No	Inorganic elements	Result
1.	Calcium	+
2.	Magnesium	+
3.	Sodium	+
4.	Potassium	++
5.	Iron	++
6.	Sulphate	+
7.	Phosphate	+
8.	Chloride	+
9.	Nitrate	+

Indications: "+" means positive activity, "-" means negative activity

Fluorescence analysis determination

Fluorescence is the phenomenon presented by various chemical constituents present in the plant material. Some constituents show fluorescence in the visible range under daylight condition. Ultraviolet light produces fluorescence in many natural products (eg alkaloids such as berberine), which do not fluorescence visible in daylight. The fluorescence visible colour observed short 254 nm and visible 365 nm in colour indicates natural products.

Table 3: Fluorescence studies of *Carica papaya. L leaves* extract

S.NO	Analysed phytochemical factor	Visible Light	Short UV 254nm	Long UV 365nm
1	brown seaweed powder (pp)	Dark Green	Light Green	Light Block
2	PP with water	Light Green	Light Green	Dark Green
3	PP with Hexane	Dark Brown	Light Brown	Brown
4	PP with Chloroform	Light Green	Green	Block
5	PP with Methanol	Dark Green	Light Green	Dark Green
6	PP with acetone	Green	Dark Black	Green
7	PP with IN Sodium hydroxide in water	Light Green	Brownish -Yellow	Light Green
8	PP with IN Hydrochloric acid	Dark Green	Green	Dark Green
9	PP with sulphuric acid with an equal amount of water	Light Green	Light Block	Dark Black
10	PP with Nitric acid diluted with an equal amount of water	Dark Green	Green	Dark Green

Past to the phytochemical screening, a flighty evaluation of phytoconstituents be done by the lead of powder drug with different accumulate reagents which powdered prescription showed different shades when it Fluorescence conduct examination of phytochemical factors presence of various synthetics.

Physico-chemical analysis

Drugs originating from Brown seaweed powdered sources are thought to be a promising alternative for other synthetic anti-diabetics such as sulphonylureas, insulin treatment and biguanides. brown seaweed powdered products are believed to more preferable due to less toxicity, economic and better patient compliance [20]. Hence, medicinal brown seaweed powdered and products thereof are used in many countries in the treatment and management of diabetes.

Table: 4: Ash values of *Carica papaya. L leaves* extract

S. No.	Parameters	Values
1.	Total Ash	11.2%
2.	Acid Insoluble Ash	1.3%
3.	Water Soluble Ash	11.2%
4.	Sulphated Ash	9.2%

Table 5: Moisture content, foreign organic matter, foaming index and swelling index of *Carica papaya. L leaves* extract

S. No.	Parameters	Values
1	Moisture Content	19.21%
2	Foreign Organic Matter	Nil
3	Foaming Index	Less than 100
4	Swelling Index	0.5cm

Table 6: Extractive values of *Carica papaya. L leaves* extract

S. No.	Solvent	Values % (w/w)
1	Ethanol	1.8
2	Methanol	1.3
3	Water	1.9
4	Chloroform	0.7
5	Ethyl Acetate	0.3
6	Petroleum Ether	0.9

The results of physicochemical parameters such as total ash, acid insoluble ash, water-soluble ash and sulphated ash are shown in Sulphated ash value (9.2%) was lower than the total Ash value (7.0%). The acid-insoluble and water-soluble ash values were 9.2% and 11.2%, respectively (Table: 4).

Further, the results also showed that moisture content, swelling index and foaming index were found to be 19.21%, 0.5 cm and less than 100 respectively while foreign organic content was found to be Nil (Table: 5). The extractive values for various solvents such as ethanol, methanol, water, chloroform, ethyl acetate and, petroleum ether were found to be 3.1%, 1.3%, 1.9%, 0.7%, 0.3% and 0.9% respectively. (Table: 6).

Conclusion

Herbal therapies more effective, it is pertinent to isolate anti-diabetic molecules, define their targets for understanding their modes of action and establish structure and function relationships for better efficacy and pharmacokinetic profile. The fluorescence analysis of *C. papaya* leaf powdered drug play an important role in the determination of quality and purity of the drug. the substances which have ability to prevent such protein denaturation could be a useful anti-arthritis drug and diabetic natural sources highly presence of Aqueous extract from physicochemical parameters have essential jobs in recognizable proof, verification and foundation of value parameters of the species. In the future, these efforts will lead to new chemo-types which will be safer and more cost-effective for the rural Indian population suffering from diabetes, whose numbers are increasing linearly.

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Conflict of Interest

The authors have declared that there is no conflict of interest.

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