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Identification of Phytochemical Constituents of Carica Papaya Ethanolic Leaves Extract and Preparation of Its Mouth Dissolving Films

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ABSTRACT :

Carica papaya leaf extract is known to have wide beneficial medicinal properties. Powdered leaves of Carica papaya ethanol extract is used. Carica papaya L.(Linn) (Caricaceae) is traditionally perineal plant with reported uses in treatment of various skin conditions, including ulcers. Recent studies have claimed the potential beneficial effects of Carica papaya leaf extract for treating patients with dengue infection. This study aims to evaluate the therapeutic potential of Carica papaya leaf extract for treating dengue patients. It is widely used in developing countries as an effective and accessible treatment for various wounds. The extract and fractions were further subjected to phytochemical assays for the presence of secondary metabolites using standard methods.

The mouth dissolving film is the most advanced solid dosage form for oral administration due to its flexibility and convenience of use. This mouth dissolving films are oral solids that disintegrate and dissolve within one minute when placed in the mouth without swallowing or chewing. This dosage form allows the drug to bypass first-pass metabolism so that the bioavailability of the drug can be improved. The formulation of mouth dissolving films contains both visual and performance characteristics as a plasticized hydrocolloid. These films are evaluated for various parameters such as thickness, physical properties such as break resistance, dissolution and dissolution time.

Keywords: Carica papaya, Nutrient composition, Mouth dissolving film, Permeability, Bioavailability, Salivary fluid.

I . INTRODUCTION:

Carica papaya Linn (Caricaceae) is a large, single-stemmed herbaceous perennial tree cultivated all over the world, and contains many biologically active compounds like papain and chymopapain. Theconcentration of the compounds varies in the fruit, latex, leaves, and roots.

Carica papaya is used as a contraceptive, pain reliever, and digestive agent (papain) & reverses the fertility in cats. The present study was made to investigate anthelmintic (carbine) effectiveness against intestinal worms and other parasites, Pharmacognostic studies involve organoleptic, macroscopic, microscopic, and powder studies, physicochemical studies, phytochemical studies, fluorescence studies, etc. They have to be attempted for the plant under study before it can be taken up for drug formulations.

Traditionally, the leaves of C. papaya, in decoction or infusion form, are consumed orally to reduce blood pressure and sugar levels. juice of C. papaya leaf is used for irregular menstruation while the infusion of young leaf is used for fever the use of C. papaya leaf as an adjunctive treatment to the standard care for improving platelet counts, especially in cases of dengue fever, or more recently, in cancer treatments

C. papaya leaf has been reported to contain several important phytochemical compounds including flavonoids, alkaloids, tannins, quinones, and steroids which may collectively contribute to its biological activities

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Advantages of Mouth Dissolving Film.

1. Ease of swallowing for geriatrics and pediatrics.
2. Convenient and accurate dosing.
3. No need for water for administration.
4. Convenient for dysphasic patients having difficulty in swallowing tablets and capsules
5. Easy transportation

IDEAL CHARACTERISTICS FOR MDF'S:

The ideal characteristics of MDFs are as follows:

1. It should be thin, flexible, durable and easy to handle.
2. The films should be convinient, not sticky, hygroscopic and keep a plane form without rolling up.
3. It should be easy to administer.
4. The film should offer an agreeable taste and a satisfying mouth.
5. The disintegration time should be as rapid as possible.
6. The film surface should be smooth and uniform.
7. It should remain physically and chemically stable during its shelf life

II. DRUG PROFILE:

Fig. 1 Carica papaya leaves and Plant

Table 1.Carica papaya plant parts and their medicinal use

PARTS	MEDICINAL USE
Ripe fruits	Carminative diarrhea, dysentery, ringworm, etc.
Unripened fruits	Diuretic, antibacterial, etc.
Seed	Carminative, counter-irritant as a paste in the treatment of ringworm and psoriasis, etc.
Roots	Anti-fungal activity etc.
Leaves	Asthma, beriberi, fever, abortion, antibacterial, etc.
Flower	Jaundice, pectoral properties, etc.
Bark	Antiulcer, antidiabetic, etc.
Juice	Booster immunity, etc.

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A sample of the Carica papaya leaves was collected from Saraswati Institute of Pharmacy, Kurtadi, and was identified at Saraswati Institute of Pharmacy, Kurtadi, Hingoli.

Fig. 2 Carica papaya leave

Sample preparation

The samples of the leaves of papaya were sorted, washed, and shade-dried for three days and were subsequently ground to powder using a household blender.

Fig. 3 Carica papaya leaves powder

Sample extraction:

Five hundred gram (500 g) of each of the blended leaves of papaya was macerated in 1.5 litres of methanol for 48 hours, the solution was filtered with Whatman no.-4 filter paper, then centrifuged and decanted to remove the remaining particles.

Fig.4 Carica Papaya Leaves Extraction by Maceration Proces

III. PREPARATION AND EVALUATION OF MOUTH DISSOLVING FILM:

Solvent casting method :

Films can be prepared using this method, the ingredients which are water-soluble are taken inaccurate quantity and are mixed well in beaker to make a clear solution. In other beaker containing suitable solvent add accurately weighed API and other ingredients. Then, both beakers containing formulation ingredients are mixed with stirring and finally cast into the Petri plate then allow it to dry for some period and cut the film into the appropriate size [4]

Fig. 5 Mouth-dissolving film

EVALUATION PARAMETERS

The film produced by any one of the above manufacturing methods, then, they are subjected to evaluation. Evaluation is a very crucial step to maintain inter- and intra-batch uniformity between films. Various evaluation parameters are as follows:

Organoleptic evaluation-prepared films are analyzed for their properties

Morphology study - the scanning electron microscopic at fixed magnification is used to check the morphology of the prepared film the film thickness is measured by a micrometer or screw gauge

Weight variation test - the average weights are determined by weighing each film, and then,

The average weight of the films is subtracted from the individual film weight

Texture and physical appearance -texture is checked by simple touch and appearance is to be determined simply with visual infection of films

Folding endurance - the film again and again folded at the same point until getting breaks. F. endurance value is considered as the number of times it is folded without breaking

Tensile strength (TS) - it is calculated by Kumar et al.TS=Load applied at failure×100/film thickness×width of film.

Drug content uniformity - the assay method described in pharmacopeia is followed. It is determined by measuring the drug content in the individual film

Surface pH- The prepared formulation is taken in a glass plate for 30 seconds containing water. The pH was noted after bringing the electrode of the pH

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meter in contact with the surface of the formulation and allowing equilibration for 1 min. The average of three determinations for each formulation was done

Moisture content- The amount of moisture present in the film affects the brittleness and friability of the film. The amount of moisture present in the film can be determined using the Karl Fischer titration method, or by the weighing method, A specific size of pre-weighed film is heated to 100–120°C until it attains constant weight and the difference in weight gives the amount of moisture present in the film. Moisture content can be calculated by the following formula: % Moisture content = [(Initial Weight-Final weight) ×100/initial weight] disintegration time of MDFs carried out using the U.S.P. disintegration apparatus.

IV. RESULT AND DISCUSSION

Identification test of Phytoconstituents

The phytochemical study of Carica papaya leaves is done and the following phytochemical constituents are present in carica papaya leaves extract Observation of Phytochemical analysis is illustrated below in Table 2.

Table 2: Phytochemical analysis of Carica papaya leaves extract

TESTS	Carica Papaya
Alkaloids	+
Flavonoids	+
Saponins	+
Steroids	+
Tannins	+
Glycosides	+

+: Presence of Phytochemicals-: Absence of Phytochemicals

Table 3.: Concentration percentage of mouth-dissolving film formulations

Ingredients	Concentration percentage
API (drug)	01–25
Plasticizer	00–20
Flavoring agents	02–10
Sweetening agents	03–06
Hydrophilic polymer/film former	40–50
Saliva stimulating agent	02–06
Color	01
Surface active agent	Quantity sufficient

From the above data, it shows that each film contains 0.02 gm of drug. And the evaluation test was carried out for the C.Papaya mouth dissolving film.

C.papaya plant consists of various phytochemicals which are responsible for several pharmacological applications. Successful determination of biologically active constituents from plant material is largely dependent on the type of solvent used in the extraction procedure. The solvent was selected based on the stability of chemical constituents present in the C.papaya plant. Ethanol was used as a solvent for the identification of various Phytochemical Constituents. Mouth dissolving film (MDF) is an innovative approach for the systemic delivery of therapeutically/ medicinally active drug substances.

Formulation of mouth-dissolving films involves both the visual and performance characteristics as plasticized hydrocolloids and API taste masking agents are being laminated by solvent casting method. The solvent casting method is the most preferred method over other methods because it offers great uniformity of thickness and the films prepared have a fine glossy look and better physical properties. Mouth-dissolving films are evaluated for their various parameters like thickness, and physical properties like folding endurance, disintegration, and dissolution time.

At present, these formulations are available only for the management of some diseases so reflecting their importance likely other diseases can be managed by making film formulations using suitable API.

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V.CONCLUSION:

It is concluded that Bioactive compounds can be studied by extraction and isolation The current study which was aimed at investigating the presence of biologically active phytochemicals and antioxidant properties of C. papaya leaves extract reveals that samples with Ethanol have shown the presence of phytochemicals constituents such as alkaloid, Tannin, Flavonoids, saponin and steroids Among the used solvent extracts, the C. papaya leaves with methanolic fraction showed the presence of more phytochemicals and have effective Flavonoids Hence, C. papaya can be considered as an important and potential natural source for various pharmaceutical and medicinal applications.

It shows that oral fast-mouth dissolving film is one of the novel approaches in the field of pharmaceutical sciences. They have improved acceptance and patient compliance with no risk of choking associated with better safety and efficacy in comparison with conventional dosage forms. MDF formulations are one of the innovative approaches in the pharmacy field in the future it may become one of the promising dosage forms for the treatment of disease or disorders. These novel formulations have improved and better patient compliance as well as acceptance, with enhanced safety and effectiveness than conventional formulations.

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REFERENCE:

[1]. N. Sarala and S. Paknikar, 2014"Papaya extract to treat dengue: a novel therapeutic option?" Annal of Medical and Health Sciences Research, vol. 4, pp. 320–324,

[2]. N. Gogna, et.al, 2015. "Metabolomic profiling of the phytomedicinal constituents of Carica papaya L. leaves and seeds by 1H NMR spectroscopy and multivariate statistical analysis," Journal of Pharmaceutical and Biomedical Analysis, vol. 115, pp. 74–85,

[3]. Vij T, Prashar Y 2015 A review on medicinal properties of Carica papaya Linn. Asian Pacific J Trop Dis 5(1):1–6

[4]. Kulkarni et.al 2003 A, Fast dissolving orally consumable films containing an antitussive and a mucosa coating agent. U.S. Patent,;206942.

[5]. Hoffmann EM, et al. 2011 Advances in mouth dissolving films for drug delivery. Expert Opin Drug Deliv8:299-316

[6]. Preis M, et.al. 2012 Development of a taste-masked mouth dissolving film containing dimenhydrinate. Pharmaceutics; 4:551-

[7]. Gavaskar B, et al. 2009 Overview on fast dissolving films. Int J Pharm PharmSci;2:29 33.

[8]. Gohel MC, Sharma R. 2010 Development of taste masked film of valdecoxib for oral use. Int J Pharm Sci; 320-3.

[9]. Pandit JK, et.al 2001 Systemic absorption of propranolol hydrochloride from buccoadhesive films. Indian J Pharm Sci;63:473-80.

[10]. Kalyan S and Bansal M. 2012 Recent trends in the development of oral dissolving film. Int J Pharm Tech Res;4:725-33