Formulation and Evaluation of Wound Healing of Carica Papaya Ointment

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ABSTRACT

Papaya (Carica papaya linn) is well known for its exceptional nutritional and medicinal properties throughout the world. From the times immemorial, the whole Papaya plant including its leaves, seeds, ripe and unripe fruits and their juice is used as traditional medicine. Nowadays, Papaya is considered as nutraceutical fruit due to its multifaceted medicinal properties. The prominent medicinal properties of papaya include Anti-fertility, Diuretic, Uretonic, Anti- hypertensive, Hypolipidemic, Anti-helmintic, Wound healing, Antifungal, Antibacterial. In order to create the extract, many solvents were used such as alcohol, methanol, and ethanol as well as aqueous extracts such as acetone and chloroform.

The extraction was performed by the process of cold maceration using solvent methanol, water and chloroform. The plant extracts were tested for antibacterial activity against microorganisms like Staphylococcus aureus, Escharichia coli, Bacillus subtilus and Enterobacter aerogenes. The phytochemical tests revealed the presence of alkaloids, glycoside, saponin, resins, flavonoids, phenols and tannins. The chloroform leaf extracts of C. Papaya exhibited maximum antibacterial activity against Enterobacter aerogenes.

Keywords: Carica papaya linn, medicinal properties, antibacterial activity, resins, flavonoids, Enterobacter aerogenes.

INTRODUCTION

An ointments are homogenious, viscous semisolid preparation, most commonly a greasy, oily (Oil-80%, Water-20%) with high viscosity that is intended for external application to skin or mucous membranes. They are used as emollients or for the application of active ingredients

to the skin for protective, therapeutic, or prophylactic purposes and where a degree of occlusion is desired. Ointments are used topically on a variety of body surfaces. These include the skin and the mucous membrane of the eye (an eye ointment), chest, vulva, anus and nose. Ointment have very moisturizing characteristic and are effective for dry skin. They have very low risk of sensitization due to having few ingredients beyond the base oil or fat and also low irritation risk. Carica papaya, often known as papaya, papayer, tinti, and pepol, is a member of the Caricaceae Family. It is grown in various parts of the world, including India, tropical America and Europe. It is commonly known as Papaya melon tree, Pawpaw or papau, Kapaya. The prominent medicinal properties of papaya include Anti-fertility, Diuretic, Uretonic, Anti-hypertensive, Hypolipidemic, Anti-helmintic, Wound healing, Anti Fungal, Antibacterial, Antitumor and free radical scavenging activities. Phytochemically, the whole plant contains enzymes (Papain), lycopene, carotenoids, alkaloids, monoterpenoids, flavonoids, mineral and vitamins. This important nutricious fruits feed the body and immune system. (4)

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Fig No 1: Wound Healing Ointment

Along with other dosage forms herbal dosage forms are also available in the form of ointments. They are semisolid preparations and are used topically for several purposes like antiseptics, antiprurities, astringents, keratolytics etc. Therefore, an attempt has been made in the present study to utilize sunflower wax substituting beeswax in ointment bases with functional benefits in the formulation of ointment. Papaya's nutritional and culinary value is well known across the world. The papaya plant's leaves, fruit, seeds, latex, and roots all contain bioactive substances. There are several plant compounds that have analgesic and antibacterial properties as well as cardiotonic and digestive, emmenagogue, hypotensive, and laxative properties. Dengue patients were treated with a palm oil solution made from papaya leaves from the Carica genus. Scientific evidence supports the use of Carica papaya leaf extract in the treatment of dengue fever. Candida albicans has been demonstrated to be inhibited by papaya seed extract.(4)

Ideal Properties of Ointment:

- It should be physically and chemically stable.
- The ointment's basis shouldn't have any medicinal properties.
- The finely split active component needs to be evenly distributed throughout the ointment base.
- The ointment has to be smooth and devoid of roughness. (4)
- Have a low index of irritation,
- Non-dehydrating, non-greasy and neutral in reaction,
- Compatible with common medicaments and also with the skin,
- Easily washable with water,
- Have minimum number of ingredients,
- Easy to compound and remain stable on storage (3)

Advantages:

1. They have site specific application of drug on affected area, which avoids unnecessary non target exposure of drug thereby avoiding side effect i.e. site specific action with less side effect.
2. They avoid first pass metabolism of drug.
3. Convenient for unconscious patients having difficulty in oral administration.
4. Comparatively they are chemically more stable and easy to handle than liquid dosage forms.
5. They are suitable dosage forms for bitter taste drugs.

Disadvantages:

1. These oily semisolid preparations are staining and cosmetically less aesthetic. Application with finger tip may contaminate the formulation or cause irritation when applied.
2. As compared to solid dosage forms, semisolid preparation are more bulky to handle.
3. Though semisolid allow more flexibility in dose, dose accuracy is determined by uniformity in the quantity to be applied.

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Types of Ointment Bases

Oleaginous ointment base or hydrocarbon ointment base

1) Oleaginous ointment base or hydrocarbon ointment base(water in Oil)
2) Absorption ointment bases
3) Water removable bases or water washable base
4) Water soluble base.

These bases have following properties

a) Small amount of aqueous component can be incorporated into these bases.
b) These bases have emollient effect.
c) These bases are difficult to wash off as these are w/o type of bases. Examples: white petrolatum, yellow ointment, white ointment.

2) Absorption ointment bases

These bases categorize into two groups:

A) Permit the incorporation of aqueous solution with the formation of water in oil type of bases.

Example: Hydrophilic petrolatum Lanolin

B) These are already w/o type of bases and permit the additional amount of aqueous solution.

Example: Anhydrous lanolin

3) Water removable bases or water washable base

These bases are also called as emulsifying bases or oil in water type of emulsion bases. Advantages of these base are:

Example: Hydrophilic ointment, Vanishing cream.

4) Water soluble base

These bases are greaseless bases containing water soluble constituents.

Carica papaya

Carica papaya, often known as papaya, papayer, tinti, and pepol, is a member of the Caricaceae family. Carica papaya is a fast-growing tree that may reach a height of 7-8 metres.

Fig No 2: Papaya Tree

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Table No 1: Taxonomical Classification of Papaya Plant

Taxonomic Rank	Name
Kingdom	Plantae
Subkingdom	Tracheobionta
Division	Magnoliophyta
Class	Magnoliophyta
Family	Caricaceae
Genus	Carica L
Species	Carica papaya L

Physiochemical Constituents:

Papaya (Carica papaya Linn.) is well known for its exceptional and medicinal properties throughout the world. The whole Papaya plant including its leaves, seeds, ripe and unripe fruits and their juices is used as traditional medicine.(8)

1. Alkaloids
2. Flavanoids
3. Phenolic compounds
4. Enzymes
5. Tannins
6. Sponins
7. Terpenoids
8. Steroids

Table No 2: Medicinal Uses of Papaya Plant

Part of plant	Chemical Constitutents (1)	Uses
Fruit	Volatile substance includes amino acids, citric acid and benzylisothiocynate. Nutrients include calcium, iron, vitamin C, thiamine, Riboflavin, Niacin.	Digestive Health , Nutrition
Juice	Lipids and myristic acids as well as linolenic acid, linlenic acid, oleic acid, and linolenic acid.	Immune system support, Skin health.
Seeds	Fats, protein and fibre from papaya, caricin, carpain, and the enzyme myrosin.	Digestive health , Antioxidant
Roots	Enzyme called myrosin and a carbohydrate called carboside.	Female reproductive health , Arsenic poisoning, Diuretics.
Leaves	Carpain and pseudocarpain, alkaloids include choline, dehydrocarpaine I and II, dehydrocarpaine III, and the vitamins C and E.	Boosting Platelet levels, Support immune system.
Bark	Glucose, fructose, sucrose, xylitol, and sitosterol are all types of sugars.	Treat Diarrhea, Toothache, Dye removal (Bi-sorbent).

Pharmacological Properties:

Anti-inflammatory activity

The anti-inflammatory property of plant cysteine proteinases were already noted in literature. In a clinical study, the histological severity of inflammatory bowel disease was determined for treatment of chronic inflammatory and related diseases papain has found to be safe and efficacious. Anti inflammatory activity of papaya seeds were also reported. The anti inflammatory effect of the leaves extract including the reference drug was very poor when using the carrageenan method, the 100 mg/kg extract produced its highest effect at 3 hr (2.7%) after carrageenan injection while the 200 mg/kg extract also produced its effects at 3 hr (6.7%) after injection.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

Wound healing activity

The similarities between latex coagulation in papaya and the mammalian coagulation process led us to propose that some analogous factor may be present in both systems. If putative analogies do occur, it is possible that some plant metabolites intervening during plant healing may also act during the healing process ensuring clot formation in mammals. The proliferative effect of papain attained 15% above control, suggesting that this properly is specific for some proteolytic enzymes. Also one study showed that papain from C. papaya latex was effective in protecting histamine-induced ulcer in rat by blocking the acid secretion.

Anti-fertility activity

The anti-fertility effects of Carica papaya were investigated by feeding adult and pregnant rat with different components of the fruit. No attempt was made to force feed the animal and the result indicated that the unripe fruit interrupted the estrous cycle and induced absorbed.

Antihelmintic activity

A wide range of plants and plant extracts has been used traditionally for the treatment of helminthes infections including papaya, which is rich in proteolytic enzymes known to digest nematode cuticles, have low toxicity and have been used in traditional medicine against gastrointestinal nematodes.

Anticancer activity

Initially pharmaceutical preparations containing various proteolytic enzymes (papain) have been used as adjuvant in the treatment of malignant diseases, despite lack of knowledge of their mode of action. Experiments indicate that the effects after oral administration of polyenzymes preparations are related to the induction of cytokines production by human peripheral blood mononuclear cells. Papaya in vitro study shows that it will treat many cancer cell line and they have anticancer activity.

Antifungal activity

The latex of papaya and fluconazole has synergistic action on the inhibition of Candida albicans growth. This synergistic effect results in partial cell wall degradation due to lack of polysaccharides constituents in the outermost layers of fungal cell wall and release of cell debris into the cell culture. Latex proteins appear to be responsible for antifungal action.

Antibacterial activity

The seeds of Carica papaya were found to possess bacteriostatic activity against several enteropathogens such as bacillus subtilis, enterobacter cloacae, 9scherichia coli, salmonella typhi, staphylococcus, proteas vulgaris, pseudomonas aeruginosa and klebsiella pneumonia. Among the gram positive and gram-negative bacteria tested the gram negativebacteria were more susceptible to the extract.

Anti-hypertensive activity

Papaya leaves decoction can be used as an anti-hypertensive agent.

Anti-amoebic activity

The cold macerated aqueous extract of matured papaya seeds has shown anti amoebic activity against Entamoeba histolytica. (1

Aims & Objectives

Aim:

1. To evaluate the antimicrobial and wound healing efficacy of Carica papaya-based ointment.

Objectives:

1. To formulate an ointment using extracts of Carica papaya (e.g., fruit, leaves, or seeds).

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

2. To perform phytochemical screening of the extract to identify bioactive constituents responsible for antimicrobial and healing activities.
3. To assess the in vitro antimicrobial activity of the ointment against selected pathogenic microorganisms (e.g., Staphylococcus aureus, E. coli, Pseudomonas aeruginosa).
4. To evaluate the wound healing potential of the ointment using animal models (e.g., excision or incision wound models in rats).
5. To compare the wound healing performance of the papaya ointment with a standard marketed ointment.

Need of Work

1. Rising antibiotic resistance: There is a growing global concern over antimicrobial resistance, highlighting the need for alternative, plant-based antimicrobial agents.
2. Traditional usage lacks validation: Though Carica papaya is widely used in traditional medicine for wound healing, there is limited scientific validation of its efficacy in topical formulations.
3. Natural alternatives to synthetic drugs: Plant-based ointments like Carica papaya may offer safer, more affordable, and eco-friendly options compared to synthetic wound healing agents and antibiotics.
4. Broad phytochemical profile: Carica papaya contains bioactive compounds (e.g., papain, flavonoids, alkaloids) known to exhibit antimicrobial and anti-inflammatory properties that merit focused investigation.
5. Need for formulation-based studies: While some extracts have shown potential in vitro, studies specifically evaluating formulated ointments for topical application are sparse and needed.
6. Chronic wound burden: Non-healing wounds are a significant public health issue, and effective, accessible wound care solutions are in demand, especially in low-resource settings.
7. Improving patient outcomes: A well-evaluated Carica papaya ointment could support faster healing, reduce infection risk, and enhance the quality of life for patients with wounds.

MATERIAL AND METHOD

Collection of Papaya Leaves:

The Leaves were collected from surrounding of the collg from medicinal garden in month of April. The collected leaves were thoroughly washed with tap water to avoid dusts and other unwanted materials accumulated on the leaves from their natural environment. The Dusts free leaves were kept in Tray dryer (Brand: DellMarc) at temp 67 deg celcius for 24hrs for complete drying. After 24hrs for obtaining aqueous extract, the properly dried leaves were then grinding into the fine powder by using grinding machine than the powder material of Carica papaya leaves were weighed properly.

Preparation of Aqueous extract of Carica papaya (leaves):

The extraction was performed by the process of Cold maceration using methanol solvent. In this process firstly 20gm powdered leaves of carica papaya were weighed on butter paper. After weighing the powder pour into the maceration apparatus. Before pouring into maceration apparatus cotton is placed into it for more pure aqueous extract. After placing cotton weighed powder is pour into the maceration, Ethanol (60ml) is then added to it. After adding ethanol, it is kept for 2 days. Extract was filtered by using Whatman no 1 filter paper and then green colour filtrate was obtained.

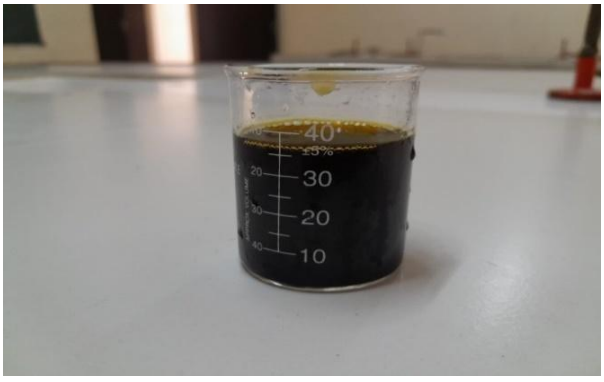


Fig no 3: Papaya Plant Extract

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

Method Of Preparation:

Formulation Table (for 20 gm Ointment):

Table No 4: Formulation Table

Sr. No.	Ingredients	Quantity Taken (20g)	Uses
1	Wool Fat	1.0	Emollient, Moisturizer
2	Cetostearyl Alcohol	0.5	Stabilizer
3	Hard Paraffin	1.0	Thickening agent, Emollient
4	Yellow Soft Paraffin	15.0	Moisturizer (base)
5	Honey	1.0	Antibacterial
6	Plant Extract	1.5	Wound healing, Anti-inflammatory, Antimicrobial

Ointment Preparation Procedure:

a) The ointment is prepared by the Fusion method in which where In this method the ingredients are melted together in descending order of their melting points and stirred to ensure homogeneity. Initially ointment base was prepared by weighing accurately grated hard paraffin which was placed in evaporating dish on water bath. After melting of hard paraffin remaining ingredients were added and stirred gently to aid melting and mixing homogenously followed by cooling of ointment base on ointment slab.

b) It was prepared by mixing accurately weighed papaya extract to ointment base by levigation method to prepare a smooth paste with two or more base until to form a homogeneous ointment, finally transferred in a suitable container.

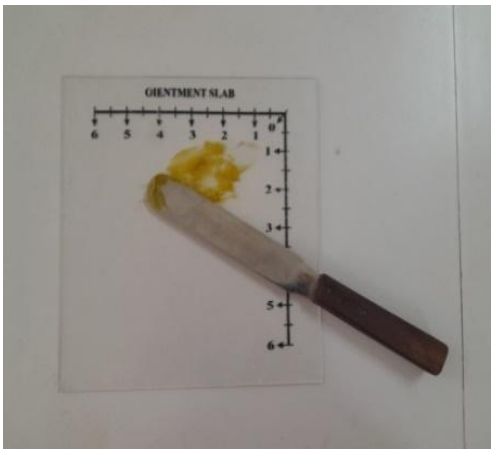


Fig no 4: Ointment slab

Fig no 5: Formulated Ointment

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

Evaluation:

A. Physiochemical evaluation of Papaya extract :

Test for Tannins:

1. Sample Preparation

• Material required: Dried and powdered plant sample (e.g., leaves, bark)

• Solvent: Distilled water or ethanol

o Take about 0.5–1 g of the powdered plant material.

o Boil in 10–20 mL of distilled water for 5–10 minutes.

o Cool and filter the extract.

2. Ferric Chloride Test:

1. Take 2–3 mL of the prepared extract in a test tube.

2. Add 1–2 drops of 5% ferric chloride solution.

3. Observe the color.

3. Gelatin Test:

1. To 2–3 mL of the extract, add 1 mL of 1% gelatin solution.

2. Add a few drops of 10% sodium chloride solution.

3. Mix well.

4. Lead Acetate Test:

1. Add 1–2 mL of lead acetate solution to 2–3 mL of the extract.

B. Evaluation of Ointment:

All the prepared ointments were characterized for the parameters such as appearance, odor, color, homogeneity, pH, spreadability, hardness, water number, and viscosity measurements.

1. Organoleptic characteristics

All blank formulations (i.e., formulations without active ingredient) and drug-loaded formulation were tested for physical appearance, color, texture, phase separation, and homogeneity. These characteristics were evaluated by visual observation. Homogeneity and texture were tested by pressing a small quantity of the formulated cream and gels between the thumb and index finger. The consistency of the formulations and the presence of coarse particles were used to evaluate the texture and homogeneity of the formulations. Immediate skin feel (including stiffness, grittiness, and greasiness) was also evaluated.

2. PH

About 2.5 g of all formulations were taken in dry beaker and 50 ml of water was added. Beaker containing ointments was heated on water bath at 60–70°C. The pH of ointments determined using a pH meter (pH Tutor, Eutech Instruments). The determinations were carried out in triplicate and the averages of three readings were noted.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

3. Spreadability

Spreadability of the formulation was determined by an apparatus suggested by Multimer with some modifications. It consists of a wooden block having a pulley at one end with fixed glass slide on block. An excess of ointment (3 g) placed on ground plate. The ointment was sandwiched between this plate and another glass plate having the dimension of fixed ground plate and provided with the hook. A 1 kg weight was placed on the top of the two plates for 5 min to expel air and to provide a uniform film of the ointment between the plates. Excess of ointment was scrapped off from the edges. The top plate was then subjected to pull of 240 g. With the help of spring attached to the hook and time required by the top plate to cover a distance of 10 cm was noted. A shorter interval indicates better spreadability. Spreadability was calculated using the following formula:

$S = M \times L/T$

Where, S = Spreadability

M = Weight in the pan (tied to the upper slide) L = Length moved by the glass slide and

T = Time (in seconds) taken to separate the slide completely each other.

4. Viscosity

Brookfield Synchro-Lectric Viscometer (Model RVT) with Helipath Stand was used for rheological studies. The sample (50 g) was placed a beaker and was allowed to equilibrate for 5 min before measuring the dial reading using a T-D spindle at 10, 20, 30, 50, 60, and 100 rpm.

At each speed, the corresponding dial reading on the viscometer was noted. The spindle speed was successively lowered and the corresponding dial reading was noted. The measurements were carried in triplicate at ambient temperature. Direct multiplication of the dial readings with factors given in the Brookfield Viscometer catalog gave the viscosity in centipoises (CPS).

5. Drug content

Content of salicylic acid in the formulation was determined by diluting 1 g of ointment equivalent to 2 mg of drug in 10 ml of ethanol and volume was made up to 100 ml with pH 7.4 phosphate buffer. Absorbance was measured at 275 nm using ultraviolet (UV)-visible spectrophotometer and percentage drug content was observed.

6. Stability testing

The developed ointment formulations were subjected to stability study as per the International Conference on Harmonization (ICH)guidelines. The formulated ointment was filled in the collapsible tubes and stored at different temperatures and humidity conditions, namely, 25°C±2°C /60%±5% RH, 30°C±2°C /65%±5% RH .

7. Anti Microbial Activity:

The seeds of Carica papaya were found to possess bacteriostatic activity against several enteropathogens such as bacillus subtilis, enterobacter cloacae, escherichia coli, salmonella typhi, staphylococcus, proteas vulgaris, pseudomonas aeruginosa and klebsiella pneumonia.

Among the gram positive and gram-negative bacteria tested the gram negativebacteria were more susceptible to the extract.(4)

Preparation of Culture medium:

Except for agar, all of the materials were properly dissolved in 1 L of double-distilled water to produce 1 L of broth medium. To produce agar plates, 15 g/L of agar is added to the solidifying medium of choice. After adjusting the pH of the medium to 7.0 with 1 N NaOH, it was autoclaved for 20 minutes at roughly 121°C.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

Table No 5 : Preparation of Agar Media

Ingredients	Quantity Taken
Agar	3gm
Peptone	2gm
Beef extract	2gm
NaCl	1gm
Dist . water	100ml

Fig No 6: Agar media

Fig No 7: Preparation of Agar media

The various crude extracts of male Papaya leaves (petroleum ether, ethyl acetate, 70 % ethanol, and watery) were tested on six species of microorganisms. The agar disc diameter is 6 mm. The inhibition zone diameter including agar disc diameter was measured. The larger the disc diameter, the greater the antimicrobial activity. In the case of Pseudomonas fluorescens, petroleum ether extract (59.5 mm) showed more potent antimicrobial activity than the standard medicine, chloramphenicol (42.2 mm). Moreover, ethanol and watery extracts of leaves were inhibited (14.5-18.5 mm) against Escherichia coli.

Fig No 8: Escherichia coli

The cup plate agar diffusion technique was used to evaluate the antibacterial activity of aqueous and organic extracts of the Carica papaya plant. The bacterial cultures were adjusted to a turbidity standard of 0.5 McFarland, and 100 l extract dilutions reconstituted in 50 percent DMSO and distilled water were added at

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

concentrations of 200, 150, 100, and 50 mg/ml to each well of the previously seeded culture plates . For 24 hours, the cultures were incubated at 37 °C. A well was created in each of the agar growth plates .(7)

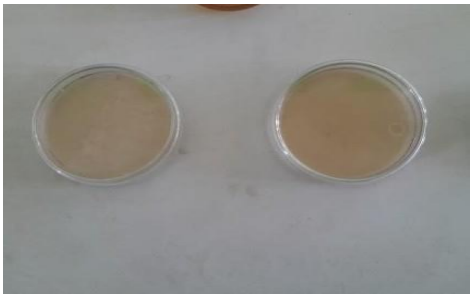


Fig No 9: Agar plate

8. UV Spectrophotometric Analysis:

The flavonoid content in the ethanol extracts was quantified using a Shimadzu UV-1800 spectrophotometer. Rutin was used as the reference standard for calibration.

Preparation of Standard Solution: A stock solution of rutin (1 mg/mL) was prepared in ethanol and diluted to obtain standard solutions ranging from 10 to 100 µg/mL.

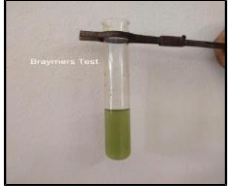
Sample Analysis: The ethanol extracts of the papaya samples were diluted appropriately, and their absorbance was measured at 415 nm. The Tannins content was calculated using the calibration curve .(4)

Fig No 10: UV Dilutions

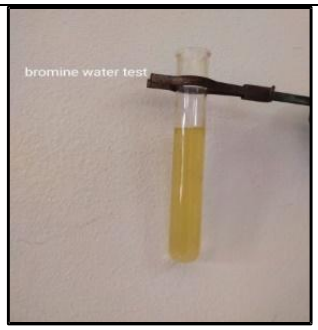
RESULT AND DISCUSSION

Physiochemical Test Results:

Table No 6: Phytochemical Test

Sr no.	Test	Observation	Result
1	Gelatin test	 White Precipitate	Tannins present
2	Braymers test	 Blue- green colour	Tannins present

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

3	10% NaOH	 Formation of emulsion	Tannins present
4	Bromine water test	 Discoluration of Bromine	Tannins present

Evaluation Of Ointment Results:

Physical parameter:

Table No 7: Physical Parameter

Sr no	**Parameters**	
1	Colour	Brown Yellow
2	State	Semisolid
3	odour	Characteristics
4	Texture	Smooth

Fig No 11: Ointment

Determination of PH:

The ph of the ointment was found to be in range of 5-6.5 which is good for skin ph .

Table No 8: Determination of pH

Sr no.	**ph**
1	5.4

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

Stability Testing:

Table No 9: Stability Test

Temperature and humidity	Evaluation parameter	Observation
	Visual appearance	Brown yellow
30 deg c \ 60% 5%RH	Phase separation	Nil
	Homogeneity	Good
	ph	5

Spreadability:

The Spreadability plays a considerable role in patient compliance and ensures uniform application of ointment to a large area of skin. The lower vale of spreadability indicates the lesser work required to spread the ointment over the skin. It shows that formulation ah good spreadable property.

Table No 10: Spreadibility

Sr no.	Formulation	Spreadability
1	F1	20 sec

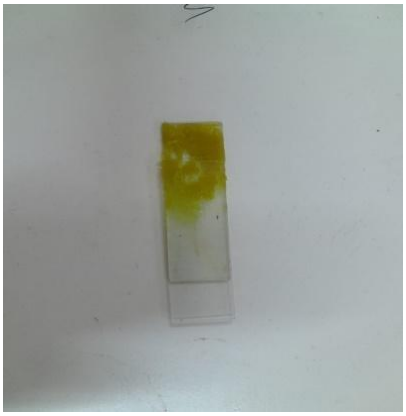


Fig no 12: Spreadibility

Viscosity:

Viscosity is measured by Brookfield synchro viscometer. The Viscosity is found to be 183 centipoise at 350rpm.

Fig no 13: Brookfeild Viscometer

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

Physiochemical Evaluation of Ointmnet:

Table No 11: Physiochemical Evaluation

Phytochemical parameters	**Observation**
Colour	Brown yellow
Odour	Characteristics
Consistency	Smooth
Ph	5.4
spreadability	20 sec
Solubility	Soluble in boiling water
Washability	Good
Stability study	Stable

Anti -Microbial Test Result:

The Antimicrobial Activity is carried out by the Disc diffusion method in which prepare agar plate with a uniform layer of agar medium. Inoculate the plates with standardized suspension of the test microorganism. allow the plates to dry. Place agar plate between 2 burner, firstly mark the points behind the agar plate. After marking with the help Nichrome wire the bacteria (E.coli) is transfered into the agar plate .Then agar plate is kept in incubator for incubation at a controlled temperature (35-37deg c) for 18 – 24hrs for microbial growth . After incubation wholes are made with help of test tube, then extract is introduce in the wholes which are dis like shape. Then the microbial growth is observed.

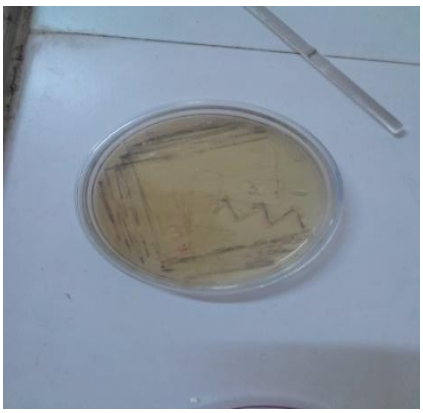


Fig No 14: Before incubation

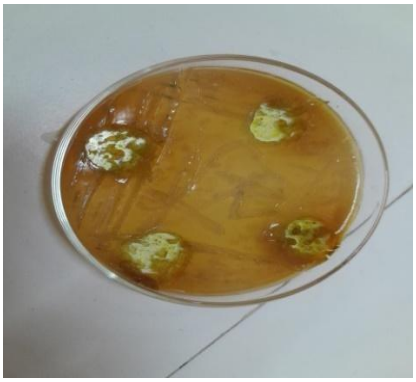


Fig No 15: After incubation

Table No 12: Bacterial Growth Result

Bacteria	**Observation**
E. coli	No microbial growth found

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue VII July 2025

UV Spectrophotometric Analysis Result:

The flavonoid content in the ethanol extracts was quantified using a Shimadzu UV-1800 spectrophotometer. Rutin was used as the reference standard for calibration.

Preparation of Standard Solution: A stock solution of rutin (1 mg/mL) was prepared in ethanol and diluted to obtain standard solutions ranging from 10 to 100 µg/mL.

Sample Analysis: The ethanol extracts of the papaya samples were diluted appropriately, and their absorbance was measured at 415 nm. The flavonoid content was calculated using the calibration curve .

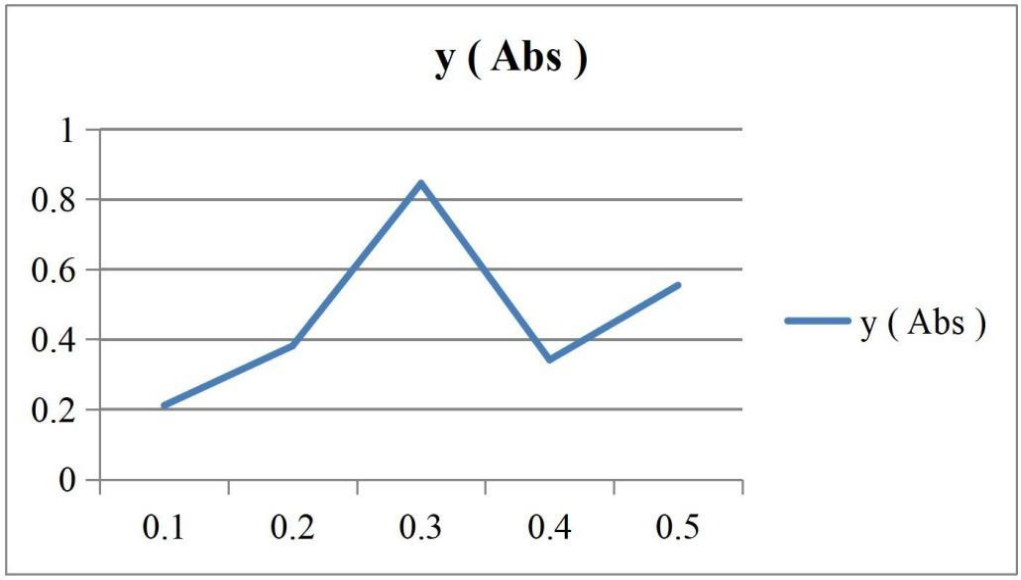


Fig No 16: UV spectrum of Carica papaya

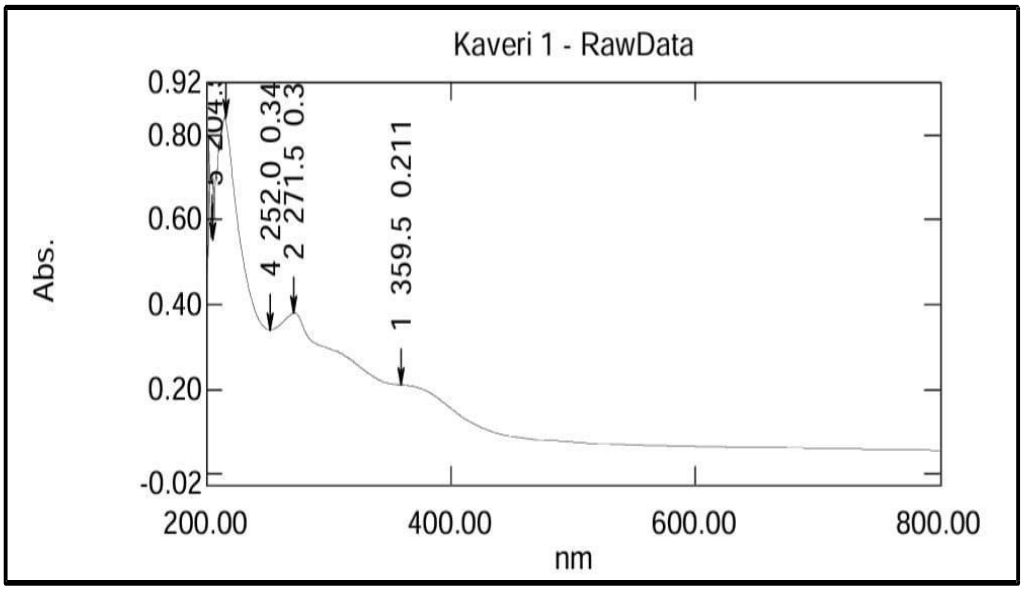


Fig No 17: Callibration curve of C. papaya

CONCLUSION

Papaya (Carica papaya Linn.) is well known for its exceptional and medicinal properties throughout the world. The whole Papaya plant including its leaves, seeds, ripe and unripe fruits and their juices is used as traditional medicine. Flavanoid content than the imported Indian Papaya Carica. Local samples average concentration is 0.692% while Indian samples concentration is 0.588%. The findings suggest that local Papaya Carica could be a more potent source of flavonoids, offering greater health benefits. Further studies on the specific

environmental factors and agricultural practices that enhance flavonoid content in local papaya are recommended. By conducting this study, we contribute to the understanding of the phytochemical differences between locally grown and imported medicinal plants, highlighting the importance of local biodiversity. The purpose of the study was to prepare antimicrobial herbal ointment using locally available plants. On the basis of antimicrobial efficacy, five different local plants were taken and their ethanolic extracts were incorporated in the most effective ratio in appropriate base. The final product readily spread on skin surface, showed no irritant effect, diffused well and was stable at different temperatures. (5) The final product readily spread on skin surface, showed no irritant effect, diffused well and was stable at different temperatures. The final conclusion was obtained from this formulation is it helps to treat skin problems. (6) The antimicrobial activity of the polar and nonpolar extracts was screened by using the Agar Disc Diffusion method on six microorganisms. The preliminary phytochemical investigation of the selected sample indicated that alkaloids, α-amino acids, carbohydrates, flavonoids, glycosides, phenolic compounds, steroids, saponins, starch, tannins, and terpenoids were found to be present but cyanogenic glycosides and reducing sugars were not detected in male Papaya leaves . (7)

REFERENCES

1. Different Areas of Carica papaya Linn Display Antifungal and Antimicrobial Activity. Ram Vighne a, Gaurav Mude a*, Chaitali Dangore a, Mona Kapse and Sudarshan Behere a. 11(3): 22-31, 2022; Article no.ajrimps.89723 ISSN: 2457-0745.
2. Nutritional, medicinal and pharmacological properties of papaya (Carica papaya linn). A Review: Mahendra C. Gunde*1, 2, Nikhil D. Amnerkar. ISSN: 2349-2759
3. a review on: ointment and ointment bases *Rajveer Bhaskar, 1Monica Ola, 2Prakash H. Patil and 3Kalpesh S. Nawandar.
4. Vaishnavi V. Gaikwad* Rajashree S. Chavan1, Jitendra V. Shinde2, Radhika U. Mane3,Aniket V. Chandankhede4 and Gaurav A. Patil.World Journal of Pharmaceutical Research. Volume 13.
5. Bapan Banik, Neelam Sahu, Namrata Chetia, Mousmi Saikia, Pranjal Boruah. evaluation of antioxidant and antimicrobial, activity of carica papaya (amita) leaf extracts , Pharmaceutical Research 2017, 4(1):16-25 issn 2310-4820 © dibrugarh university
6. Azamatjon shuxratjon o'g'li shokirov comparative uv spectrophotometric analysis of ethanol extract of local papaya carica and indian papaya carica plant.
7. San San Aye1, Myat Kaythi Phyo2, Ei Ei San3, Ni Ni Than4, Evaluation of Antioxidant Capacity, Antimicrobial, Anticancer Activities, and Phytochemical Investigation of Male Papaya Leaves (Carica papaya L.) University of Yangon Research Journal 2022, Vol. 11, No.1
8. Himal Paudel Chhetri*, Nisha Shrestha Yogol, Jyoti Sherchan, Anupa K.C., S. Mansoor, Panna Thapa Department of Pharmacy Kathmandu University, P.O. Box: 6250, Kathmandu, Nepal formulation and evaluation of antimicrobial herbal ointment kathmandu university journal of science, engineering and technology vol. 6, no. i, march, 2010, pp 102-107.
9. Avish d maru*, swaroop r lahoti, formulation and evaluation of ointment containing sunflower wax, Vol 12, Issue 8, 2019.
10. *Sandip H. Lahare, 2Kiran H. Lahare, 3 Jaya R. Lonsane, 4Dr. Yuvraj Girbane, Ekta Chouthe formulation and evaluation of herbal ointment containing neem and turmeric extract.
11. Rudra Prasad Giri, Dr. Ajit. K. Gangawane, Dr. Sucheta Ghorai Giri, Neem the wonder herb: A short review, International Journal of Trend in Scientific Research and Development, 2019; 3(3): 962-967. DOI:10.31142/ijtsrd23038.
12. Sera kim, Seok- Chun ko, Yoon-Sook kim, Sang-keun Ha, Ho-Young Park, Yongkon Park, andSang-Hoon Lee, "Determination of Curcuma longa L. (Turmeric) leaf extraction conditions using response surface methodology to optimize extraction yield and antioxidant content" Hindawi, journal of Food Quality, Int. J. Pharm. Sci. Rev. Res., January – February, 2023; 78(2), 21: 134-139. ISSN 0976 – 044X Volume 2019: 107:
13. Debjit Bhowmik, Chiranjib, K.P. Sampath kumar, Margret Chandira, B. Jayakar, "Turmeric: A herbal and traditional medicine" Scholars Research Library; Archives of Applied Science Research, 2009; 1(2): 86108.

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14. Indrajeet, Gonjari, Avinash H.Hosmani, Amrit B. Karmarkar, Appasaheb S. Godage, Sharad B. Kadam, Pandurang N.Dhabale, "Formulation and evaluation of situ gelling thermoreversible mucoadhesive gel of fluconazole", Drug discovery therapeutics, 2009; 3(1): 6-9.
15. Rajasree PH, Viswanad V. Formulation and evaluation of antiseptic activity of polyherba ointment/ Int J Pharm Life Sci., 2012; 3(10): 2021-2031.
16. Ms. Maryam Mulla. Sana Attar, Ms. Nazneen Nithore, Ms. Reeba Parkar. Formulation and evaluation of herbal ointment containing Neem and Karanj oil, International journal of creative research thoughts (IJCRT), 2022; 10(5): 200-205.
17. Ashwinder Singh and Vasudeva Rao Avupat, Development and Validation of UVSpectrophotometric method for the Estimation of Curcumin in Standardised Polyherbal Formulations, J Young Pharm, 2017; 9(4): 491-495.
18. Koffi N, Solange TM, Emma AA, Noel ZG. Ethanobotanical study of plants used to treat arterial hypertension, in traditional medicine. European. J Scient Res. 2009;1(1):1-10.
19. Tona I, Kambu K, Ngimbi N, Cimanga K, Vlietinck AJ. Antiamoebic and phytochemical screening of some Congolese medicinal plants. J Ethnopharmacol 1998; 61(1):57-65.
20. Sarker SK, Begum N, Mondal D, Siddique A, Rashid A. Invitro study of antiamoebic effect of methanolic extract of mature seeds of Carica papaya on trophozoites of Entamoeba histolytica. Bangladesh J Pharmacol 2010; 5:45-47.
21. Miike S, Kita H. Human eosinophils are ctivated by cysteine protease and release inflammatory mediators. J Allergy Clin. Immun 2003; 111:704-713.
22. Mojica-Henshaw MP, Francisco AD, Deguzman F, Tingo T. Possible Immunomodulatory action of Carica papaya seed extract. Clin Hemorheol Microcirc 2003; 29(3-4):219-229.
23. Oduola T, Adeniyi FAA, Ogunyemi EO, Bello IS, Idowu TO. Anti-sickling agent in an extract of unripe pawpaw (Carica papaya): is it real eal? AAfr J Biotech 2006; 5(20);1947-1949.