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Research Article

Development of Herbal Anti-inflammatory Ointment

**Vaishnavi Mahajan*, Swapnali Kondke, Ashwini Pundkar, Manjusha Markad,
Prachi Murkute, Dr. Santosh Payghan**

Rajesh Bhaiyya Tope College of B. Pharmacy, CHH. Sambhajinagar.

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ABSTRACT

Even in areas where modern medicine is available, the interest on herbal medicines and their utilization have been increasing rapidly in recent years. Plant derived substances and herbal medicines have recently attracted to great interest towards their versatile application, as medicinal plant are the richest source of bioactive compounds used in traditional and modern medicines. The present work is to formulate and evaluate the herbal ointment containing Shamipatra leaves extract. The ethanolic extract were prepared by using ultra sonic extraction method. Ointment base was prepared and formulation of herbal ointment was done by incorporating the extract in the base by levigation method. After completion of formulation it was evaluated for its physicochemical parameters like Colour, Odour, pH, Spreadability, Consistency, Solubility, Washability, etc. Also the formulation was evaluated. Shamipatra plant have many medicinal properties such as anti-inflammatory, and more. Purpose of this formulation is to formulate analgesic ointment to relieve pain with minimal side effects.

INTRODUCTION

1. Ointment: -

Ointment formulations refer to a semisolid topical formulation made of a drug with an appropriate base that is applied to the skin, mucous membranes, or wounds. Ointment mainly plays protective, lubricating, and topical therapeutic roles, and some drugs can also produce systemic effects after transdermal absorption. Ointment

formulations have the characteristics of maintaining stable and long-lasting blood concentration, being safe and reliable, rapid in efficacy, convenient in administration, and easy to be popularized.

Ideal Characteristics of Ointment: -

- It should be physically and chemically stable.
- Ointment should have high viscosity.

***Corresponding Author:** Vaishnavi Mahajan

Address: Rajesh Bhaiyya Tope College of B. Pharmacy, CHH. Sambhajinagar.

Email ✉: V.k.mahajan28112000@gmail.com

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- Active ingredients should be uniformly distributed.
- Ointment should be non-irritant.
- Should be incorporate medicaments readily.
- Ointment should be non-greasy.
- It should minimize discomfort.

Advantages Of Ointment:

- Easily applied at site of action.
- They avoid first pass metabolism of drug.
- Convenient for unconscious patients.
- Chemically more stable and easy to handle.
- Reduce side effect and toxicity.
- Easy termination in case of side effects or toxicity.
- Better patient compliance.
- Drug with poor water solubility can be Incorporated in formulation.

2. Review Of Literature

Rameshwar Lal Bishnoi, Nandlal, Samiksha, Ashwini Kumar Sharma, Sandip, (2023), *Prosopis cineraria* is a member of the Leguminosae family, often referred to as Khejri, Khijdo, Shami, and Jandi. The tree is known as 'Kalptaru' because all of its components are beneficial. It is also known as the "wonder tree," making it the "lord of the desert." Locally known as "Sangari," the pods are fresh green vegetables that Rajasthani people enjoy together with its dry fruits. Dr. Sakthivel M, Dr. Mohamed Halith S, Karthikeyan R, Kaviya M, Kiruthika M, Kowsalya S, Krishanapriya R, (2023), Even in areas where modern medicine is available, the interest on herbal medicines and their utilization have been increasing rapidly in recent years. Plant derived substances and herbal medicines have recently attracted the great interest towards their versatile application, as medicinal plants are the richest source of bioactive compounds used in traditional and modern medicine Nikita Sharma, Chandan Singh,

Rajendra Prasad Purvia, Manoj Adlakha, Manoj Mahawar,(2023), *Prosopis cineraria* Druce of family Mimosaceae is an indigenous plant which has mentioned in Ayurveda with several clinical properties. *Prosopis cineraria* is also the national tree of Telangana, Rajasthan, and Western Uttar Pradesh in India. In Rajasthan, it is known as Khejri, and in Western Uttar Pradesh as Chhonkara. A violent environmental conflict occurred in the Rajasthani village of Khejarli near Jodhpur in 1730 AD. Lipeng Shen, Shuixiu Pang, Mingming Zong, Yufan Sun, Abdul Qayum, Yuxuan Lui, Arif Rashid, Baoguo Xiu, Qiufang Liang, Haile Ma, Xiaofeng Ren, (2023), Ultrasonic-assisted extraction (UAE) is recognized as an environmentally friendly and highly efficient extraction technology. The UAE has the potential to minimize or eliminate the need for organic solvents, thereby reducing its impact on the environment. Additionally, UAE has been found to significantly enhance the production of target bioactive components, making it an attractive method in the industry. Natasha Yadav, Monjoy Kumar Choudhury, (2023) Even though Indian cuisines are famous worldwide for its culinary flavour but it is to be noted that the ingredients of Indian cuisines also possess medicinal properties as well as nutritive value. Unlike the western cuisines where meat dominate dietary protein, in India certain edible common plants provide both protein and medicinal properties. Yunqi Man, Chengcheng Lui (2022), Ointment formulations refer to a semisolid topical formulations made of a drug with an appropriate base that is applied to the skin, mucous membrane or wounds. Some drugs have local onset of action after transdermal absorption and can also produce systemic therapeutic effects. Therefor ointment formulations have attracted much attention for their advantage of convenient use, stable properties, dissolution properties. Parkash Meghwar, Preeti Dhanker, (2022), *Prosopis*



cineraria is a large perennial, therapeutic and multi-use tree of the family Fabaceae. Locally, it is known as 'khejri or Kandi. Kandi is also called "desert's king" with homeopathic worth. The plant is rich in bioactive compounds such as heneicosanoic acid, methyl heptacosanoate, 4-hydroxy benzoic acid and methyl 2-methoxy-5-hydroxycinnamate, etc. Dr. Sangeeta Verma M.D. and Dr. Vipam Kumar Saraswat M.D., (2021), Ayurveda is the science of life it tells us how to live, protect and cure our self from the diseases. The aim of Ayurveda is to maintain the health of healthy person and alleviation of disease from the diseased. To maintain the health it describes lots of remedies as Aahar Dravya. For the alleviation of disease lots of drugs in the form of combination or in the single preparation are described. Yadav Abhishek, Samata Krishanu, (2021) Herbal medicine prepare various part of plant are used like flower, leaves, seeds, root etc. Instead off an herbal drug is design as the alternative formulation for the external use in the form of ointment. For the medicinal use the herbal ointment applied externally on human body. The main aims of this research are preparation of herbal ointment from the *Emblica officinalis* plants the antibacterial activity. Shambhu Vyas, Dhruv Pandya, Archana Mankad, (2020), *Prosopis cineraria* belongs to family Leguminosae, commonly known as Khejri, Khijdo, Shami, Jandi. Leaves and pods are extensively used as fodder for cattle, camels and goats. The plant is also have been used in indigenous system of folk medicine as folk remedy for various ailments like leprosy, dysentery, bronchitis, asthma, leucoderma, piles, muscular tremors and wandering of the mind. Plant parts like Leaves, pods, flowers, stem and seeds are having different metabolites. Ahmad Syahir, Sarina Sulaiman, Maizirwan Othman and Siti Zubaidah Sulaiman, (2019) Previously, there were many extraction methods that had been done on extracting the oil such as centrifugation, chilling

and thawing, hot and cold extraction, on seeds, waste products and plants. Based on those oil extraction methods (OEM), further study is needed to develop more effective processes as most of the methods were having many disadvantages in term of time, cost, quality and safety. Aravinda Nalla and Krishna Mohan Chinnla, (2017), The present work is to formulate and evaluate the ointment of garlic bulb extract for anti-microbial activity. The benzene extract was prepared by Soxhalation method. The ointment base was prepared and four formulations of ointments were done by incorporating the extract in the base by levigation method. Dr. Vandana Pathak, Pramod Kumar, (2017) *Prosopis cineraria* is locally known as Khejri one of the most common tree of the Indian desert belonging to family Fabaceae. The plant is known as "Golden tree" or "Wonder tree" of the desert. Phytochemical screening is an important step which leads to the isolation of new and novel compounds Noor Adibah Binti Md Adib, Bappditya Chatterjee, Uttam Kumar Mandal, Farahidah Mohamed, (2016), The purpose of this study was to scale up an ointment formulation containing 25% w/w methyl salicylate, developed via 300-g laboratory batches to 45-kg batch sizes in a homogenize mixer. Method: The ointment was manufactured by fusion method in a homogenous mixer. Characterization was conducted for assay of ingredients by a validated GC-FID method, physicochemical properties and microbial limit test. Rajesh Asija, Sangeeta Asija, Deepak Sharma, Prem Chand Dhaker, Nitin Nama, (2015), The main advantage of topical delivery system is to bypass the first pass metabolism, avoidance of the risk and annoyance of intravenous therapy and of the varied conditions of absorption, like pH changes, gastric emptying time and presence of enzyme. Abhishek Gupta, Shikhar Verma, Ashish Kumar Gupta, Meena Jangra and Ravi Pratap, (2015), In the absence of systematic evaluation of wound healing properties of *Prosopis cineraria*



leaves in the literature, the present study was undertaken to evaluate the phytochemical analysis and wound healing potential of *Prosopis cineraria* leaves on excision wounds induced in experimental rats. Mahmood Ahmad, Qasier Jabeen, Muhmmad Wajid, Haji Muhammad Shoaib Khan, (2013), The aim of this Study was to establish a comparative investigation of Antipyretic activity of ethanolic extract of leaves and fruits of the *Prosopis cineraria* and phytochemical evaluation of ethanolic extracts of these parts. Mathew George, Lincy Joseph, Abishika Sharma, (2012), The aqueous leaves extraxt of *Prosopis cineraria* (AEPC) is used traditionally for the treatment of various CNS disorder. The purpose of this study was to evaluate the extract for antidepressant and skeletal muscle relaxant activity. Himal Paudel Chhetri, Nisha Shrestha Yogol, Jyoti Sherchan, Anupa K. C. (2009), Most of the antibiotics were originally derived from micro-organisms while the chemotherapeutic agents are from plants. Herbal medicine refers to the use of any plant's seeds, berries, roots, leaves, bark, or flowers for medicinal purposes. M. D. Ukani, N. B. Limbani, N. K. Meheta, (2000), Shami (*Prosopis Cinerarea* (L) Druce) of family Mimosaceae is an indigenous plant which has been mentioned in Ayurveda with several clinical properties. The plant finds use in one form of the other in various Ayurvedic preparations and this has been made in necessary to review the various studies carried out in its chemistry as well as pharmacology.

3. Rational Of the Study: -

Need Of Work: -

The study of herbal ointment is crucial for several reasons such as it give minimum side effects, no toxicity, they are non-irritant, etc. Shamipatra, vedic plant is widely used in India for various disease treatment, and has long history of

medicinal use. The ointment of Shamipatra contain prosogerin A, B, C, D, and E (flavonoid), Gallic acid (Tannins), Spicigerine (Alkaloid) which gives anti-inflammatory, muscle relaxant activity.

- When ointment applied, it offers benefits such as:
- Natural Pain Relief: It use plant based ingredient so it gives more therapeutic effect and less toxic effect
- Localized Action: Ointment allows for direct application to painful area, providing relief exactly where it's needed rather than affecting the whole body.
- Improve circulation and muscle relaxation
- It has fewer chemical additives.
- It has good compatibility with other treatment

Objectives: -

1. To create an ointment that provide effective relief from localized pain.
2. To promote the relaxation of tense muscle and reduce pain and aid healing.
3. To formulate product that is safe for topical use with minimal risk of side effects or skin irritation.
4. To create an ointment with a smooth spreadable consistency that adheres well to skin without being greasy or sticky.
5. To formulate the ointment to also benefits the skin, aiding in tissue repair and reducing irritation.

Plan Of Work: -

- Selection of pure drug
- Shamipatra
- Preparation of material and method:
- Authentication Test.
- Selection of the effective method of preparation.



- Extraction.
- Experimental design:
- Formulation and evaluation of ointment
- Result & discussion
- Conclusion
- Reference

5. Drug Profile: -

Name: Shamipatra

Synonyms: Shami, Khejri, Vanni, etc.

Botanical name: Prosopis cineraria

Geographical source: India (Rajasthan, Gujarat, Maharashtra, Punjab etc) Pakistan, Saudi Arabia, Oman, Iran, Afghanistan, Africa, etc.



Fig.no.1: - Shamipatra

Chemical Constituents : Alkaloid (Prosopine, Prosopinine, Flavonoids, Tannins (Gallic acid), Steroids, Carbohydrate, Cumarine, Quercetin, Campesterol, Sitosterol, Stigmasterol, Acetacosanol, Methyl docosanoate.

Uses: Antiinflammatory.

Authentication Test: -

A) Test for Alkaloids

- **Mayer's test:** Added few drops of Mayer's reagents to 1ml of the acidic, aqueous extract of the powder.
- **Dragendorff's test:** Dissolved few mg of alcoholic or aqueous extract of drug powder in 5 ml of distilled water. added 2 M HCl until an acid reaction occurs, then added 1 ml of Dragendorff's reagent.

B) Test for Carbohydrate

- **Fehling's test:** To 2 ml of aqueous extract of powder, added 1 ml of mix. of equal parts of Fehling's solution A and Fehling's solution B and boiled the content of the test tube for few minutes.
- **Molish's test:** To 2 ml of aqueous extract of the powder, added 2- drops of freshly prepared 20% alcoholic solutions of naphthol and Poured 2 ml of conc. H_2SO_4 50 as to form a layer below the mixture.

C) Test for Flavonoids:

- **Shinoda's Test:** To 0.5 ml of alcoholic extract of shami leaves powder, added 5- 10 drops of concentrate HCl followed by small 0.5g of "Mg" metal.
- **Alkaline reagent text:** To the test solution added sodium hydroxide solution.

D) Test for Steroids

- **Salkowski's reaction:** Added 1 mg of crude extract to 10 ml of chloroform, add equal amount of sulfuric acid from the side of test tube.

F) Test for tannins:

Ferric Chloride test: To 1-2 ml of extract of Sugarcane powder, added few drops of 5% FeCl₃ solutions.

4. MATERIALS AND METHODS

Method of Extraction:

Ultrasonic Extraction: -

1. Leaves of Shamipatra are dried at room temperature and the powder in mixer.
2. Then 20g powder weighed and transferred to conical flask, the ethanol (solvent 200 ml) is added.
3. Conical Flask is placed in ultrasonic bath for 30 min.
4. Then the sample is filtered and plant extract is obtained in filtrate.
5. Filtrate is evaporated and concentrated extract of plant leaves is obtained.

Ultrasound extraction is based on application of ultrasound waves in a liquid medium, which by acoustic cavitation (formation of small bubbles in a liquid medium) promotes diffusion of intracellular compounds through the plasma membrane and can also destroy the latter, causing release of compounds into solvent.



Fig.no. 2: - Ultrasonic Extraction

Mechanism of Extraction: -

Table no. 1: Formulation Table

Sr. No.	Ingredients	Quantity	Application
1.	Shamipatra Extract	0.5 ml	Active Ingredient
2.	Wool Fat	0.5 g	Absorption Enhancer
3.	Hard Paraffin	0.5 g	Thickening Agent
4.	Cetostearyl Alcohol	0.5 g	Stabilizer
5.	Yellow Soft Paraffin	8.5 g	Emollient



Fig. no. 3: - Ingredients

Methods of Preparation: -

A] Ointment base:

1. Accurately weigh hard paraffin and place in evaporating dish on hot plate.
2. After melting hard paraffin add remaining ingredients with constant stirring
3. After homogeneous mixture is formed, cool it down to form ointment base.

B] Herbal Ointment: -

1. Shamipatra extract was incorporated to prepared ointment base by levitating method.
2. Prepared herbal ointment is transferred to suitable container.



Fig.No. 4 :-Ingredients Melting On Hot Plate

Evaluation Test: -

Physical Examination -

Colour: Formulated ointment was evaluated for its colour. The visually colour was checked.

Odour: Odour was found by smelling the product.

Consistency: Consistency was determined by stirring the product

PH: pH of prepared herbal ointment was measured by using digital pH meter. The solution of ointment was prepared by using 100ml of distilled water and set aside for 2hrs. pH was determined in

triplicate for the solution and average value was calculated.

Spreadability: The spreadability was determined by placing excess of sample in between two slides which was compressed to uniform thickness by placing a definite weight for definite time. The time required to separate the two slides was measured as spreadability. Lesser the time taken for separation of two slides results better spreadability. Spreadability was calculated by following formula $S = M \times L / T$ Where, S= Spreadability M= Weight tide to the upper slide L= Length of glass slide T= Time taken to separate the slides **LOD:** LOD was determined by placing the formulation in Petri dish on water bath and dried for the temperature 105oC.

Washability: Formulation was applied on the skin and then ease extend of washing with water was checked.

Non irritancy test: Herbal ointment prepared was applied to the skin of human being and observed for the effect. The test is performed by applying the small amount sample to the hand and observed for 24hours to chseck the effect like redness, erythema, inflammation etc. Hence, no such effect was observed, it is non-irritant to the skin.

Solubility: Soluble in boiling water, miscible with alcohol, ether, chloroform.

5.RESULT AND DISCUSSION:

Authentication Test: -

A. Test for Flavonoids:

- **Shinoda's Test:** To 0.5 ml of alcoholic extract of shami leaves powder, added 5- 10 drops of concentrate HC1 followed by small 0.5g of "Mg" metal. Purple color was formed; thus flavonoids was present.

- **Alkaline reagent test:** To the test solution added sodium hydroxide solution. Deep yellow color was formed; thus flavonoids was present.

B. Test for Alkaloids

- **Mayer's test:** Added few drops of Mayer's reagents to 1ml of the acidic, aqueous extract of the powder. White ppt was formed, thus alkaloids was present.
- **Dragendorff's test:** Dissolved few mg of alcoholic or aqueous extract of drug powder in 5 ml of distilled water. added 2 M HCl until an acid reaction occurs, then added 1 ml of Dragendorff's reagent. Reddish brown ppt was formed, thus alkaloids was present.

C. Test for Steroids

- **Salkowski's reaction:** Added 1 mg of crude extract to 10 ml of chloroform, add equal amount of sulfuric acid from the side of test

tube. Chloroform turned violet and sulfuric acid turned green, thus steroids was present.

D. Test for tannins:

- **Ferric Chloride test:** To 1-2 ml of extract of shamipatra powder, added few drops of 5% FeCl₃ solutions. Blackish color was formed, thus tannins was present.

E. Test for Carbohydrate

- **Fehling's test:** To 2 ml of aqueous extract of powder, added 1 ml of mix. of equal parts of Fehling's solution A and Fehling's solution B and boiled the content of the test tube for few minutes. Reddish brown ppt was formed, thus carbohydrates was present.
- **Molish's test:** To 2 ml of aqueous extract of the powder, added 2- drops of freshly prepared 20% alcoholic solutions of naphthol and Poured 2 ml of conc. H₂ SO₄ 50 as to form a layer below the mixture. Purple color was formed, thus carbohydrates was present.

Table no. 2: Authentication

Plant part	Flavonoid	Alkaloid	Steroid	Tannins	Carbohydrate
Shamipatra (leaves)	+	+	+	+	+



Fig. no. 5: - Authentication Test

Colour: Colour was found to be Greenish.

Odour: Odour was found to be characteristics.

Consistency: Consistency was found to be smooth. **PH:** PH was found to be 6.5

Spreadability: Spreadability was found to be 5 sec.

LOD: Loss on drying was found to be 0.90 percent.

Washability: Washable under tap water, thus good washability.

Evaluation Parameter: -



Irritancy: No redness, rashes, or itching occurred after 24 hr. of application of ointment, thus ointment is found to be non-irritant.

Solubility: Ointment was found to be soluble in warm water, chloroform, and alcohol.

Table no. 3: Evaluation Parameter

Parameter	Observation
Colour	Greenish
Odour	Characteristics
Consistency	Smooth
pH	6.5
Spreadability	5 sec
Loss on Drying	0.90 %
Washability	Good
Irritancy	Non irritant
Solubility	Soluble in warm water, chloroform, & alcohol

CONCLUSION

The purpose of the study was to develop anti-inflammatory herbal ointment using vediv plant Shamipatra. On the basis of anti-inflammatory efficacy of Shamipatra, 20g of leaves 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, easily spreadable, well absorbed, washable under tap water.

REFERENCES

1. Roop K. Khar, SP Vyas, Farhan J. Ahmad Gaurav K. Jain, "Lachman/Lieberman's The Theory and Practice of Industrial Pharmacy", Fourth Edition, CSB Publications & Distributors Pvt. Ltd., Semisolid, Page no.717.
2. Sushruthacharya, "Sushruta Samhita", 6th Edition Chaukhambha Orientalia, Varnasi, 1997: Uttaraathana, Chapter 40 shloka 41, Page 195.
3. Sarfaraz K. Niazi, "Handbook of Pharmaceutical Manufacturing Formulations, Semisolid Product", Informa Publication, Volume 4, Edition 2nd, Page no. 124.
4. Prof. Dr. A. P. Deshpande, Prof. Dr. R. R. Javalgekar, Prof. Dr. Subhash Ranade, "DravyagunVidnyan" Part 1 & 2, Proficient Publication House, Page 576.
5. Nikita Sharma, Chandan Singh, Rajendra Prasad Purvia, Manoj Adlakha, Manoj Mahawar, "Pharmacological Activity and Meicinal Value of Shami (Prosopis cineraria) A Review", International Ayurvedic Medicine Journal, July 2023, ISSN: 2320-5091, Page 1601-1604.
6. Rameshwar Lal Bishnoi, Nandlal, Samiksha, Ashwini Kumar Sharma, Sandeep, "A Review on Shami (Prosopis cineraria L.) an ethanomedicinal plant in a desert area of Rajasthan India", Inetrnational Journal of Research in Ayurveda and Pharmacy, Volume 14, Issue 6, 2023, Page 15-18.
7. Natasha Yadav, Monjoy Kumar Choudhury, "Review of Sangri (Prosopis Cineraria Pods) A Rich Protein Source of Rajasthani Cuisine.", International Research Journal of Ayurveda and Yoga, volume 6, Issue 6, 2023, Page 188-192.
8. Yushinta Aristina Sanjaya, Pardi Sampe Tola, Rahmawati Rahmawati, "Ultrasound-associated Extraction as a Potential Method to Enhanced Extraction of Bioactive Comounds", 3rd International Conference Eco-Innovation in Science, Engineering and Technology, Volume 2022
9. Dev Kaushal, Nikita Upadhyaya, "Review on Ointment", International Journal of Pharmaceutical Science and Medicine(IJPSM), Volume 7, Issue 10, October 2022, Page 30
10. Prakash Meghwar, Preeti Dhanker, "Prosopis cineraria (Khejri/Khandi) Fabaceae : Phytochemical Study: A Mini Review",



- Agriculture Reviews, Volume 43, Issue 4, December 2022, page 485-488.
11. Samantha Krishanu, "Formulation and evaluation of herbal ointment using leaves of *Acacia nilotica* [L] Delile Extract", *International Journal of Science and Research Archive*, Volume 02, Issue 01, 19 February 2021, Page 125-130.
 12. Shambhu Vyas, Dhruv Pandya, Archana Mankad, "A Review on *Prosopis cineraria* as an Important Plant of ARID regins of India", *EPRA International Journal of Multidisciplinary Research (IJMR)*, Volume 6, Issue 3, March 2020, Page 1-6.
 13. Rupali Deshmukh, Roshani Agrawal, Sarita Chauragde, Swati Lilhare, M. U. Mishra, "Formulation and Evaluation of Ointment Containing Natural Wound Healing activity of *Tridax Procumbens*", *Research Journal of Pharmacy and Technology*, Volume 11, Issue 10, 2018, Page 37-42.
 14. Khandelwal Preeti, Sharma R. A., Ram Bhajan Kumavat, "Antimicrobial Activity of Different Parts of *Prosopis cineraria*", *Advances in Bioscience and Bioengineering*, Volume 5, Issue 5, October 2017, Page 79-81.
 15. Dr. Vandna Pathak, Pramod Kumar, "Phytochemical Screening of *Prosopis Cineraria* (L.) Stem Bark and Leaves." *International Journal of Innovative Science and Research Technology*, Volume 2, 8 August 2017, ISSN No. 2456-2165.
 16. Noor Adibah Binti Md Adib, Bappadiya Chatterjee, Uttam Kumar Mandal, Farahibah Mohamed, "Development and Charecterization of Topical Analgesic Ointment from Laboratory Production Scale", *International Conference on Industrial Pharmacy*, Volume 2, 2016.
 17. Rajesh Asija, Sangeeta Asija, Deepak Sharma, Prem Chand Dhaker, Nitin Nama, "Topical ointment: an updated review", *Journal of Drug Discovery and Therapeutics*, Volume 3, Issue 25, 2015, Page 47-51.
 18. Shelke Usha Y., Mahajan Ashish K., "Review on: an Ointment", *International Journal of Pharmaceutical Research, Human Journals*, Volume 4, Issue 2, September 2015, Page 171-192
 19. Abhishek Gupta, Shikhar Verma, Ashish Kumar Gupta, Meenu Jangra, Ravi Pratap, "Evaluation of *Prosopis cineraria* (Linn.) Druce leaves for wound healing activity in rats" *Annals of Pharma Research*, 2015, ISSN No. 2347-1956, Page 70-74
 20. Mahmood Ahmad, Qasier Jabeen, Muhammad Wajid, Haji Muhammad Shoaib Khan, Kamran Bashir, Imran Shair Mohammad, Muhammad Majid Aziz, Jalil-Ur-Rehman, "Time and Dose Dependent Antipyretic Investigations of Ethanolic of Leaves and Fruits Extract of *Prosopis cineraria* L." *Journal of Pharmacy and Alternative Medicine*, Volume 2, 2013, Page 14-19.
 21. Shruti Malik, Sonia Mann, Deepika Gupta, Rajinder K Gupta, "Journal of Pharmacognosy and Phytochemistry" *Nutraceutical Properties of Prosopis cineraria* (L.) Druce Pods: A Component of "Panchkuta" *Journal of Pharmacognosy and Phytochemistry*, Vol. 2, 2013, ISSN 2278- 4136.
 22. M.D. Ukani, N.B. Limbani, and N.K. Meheta, "A Review on the Ayurvedic Herb *Prosopis cineraria* (L) Druce" *Ancient Science of life*, Volume no. xx (1&2), October 2000, Page 58-70.

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