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Development and evaluation of Palasha (B*utea monosperma* lam.) twak ointment: A herbal remedy

Research Article

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Abstract

Palasha, botanically identified as *Butea monosperma Lam.*, belongs to the Fabaceae family and is commonly known as the "Flame of the Forest." It exhibits a range of therapeutic properties such as wound healing, diuretic, anthelmentic, anti-hemorrhoidal, and anti-inflammatory. Despite its varied uses globally, the procurement and preparation of *Palasha twak avachurnana* (dusting powder) remains a challenge. This study aimed to develop an effective *Palasha* (*Butea monosperma* Lam.) *twak* extract ointment. *Palasha twak* was authenticated and its physicochemical analysis was carried out at Central Research Facility, AYUSH Department approved, Ayurveda, Siddha, Unani Drug Testing Laboratory, Shri B M Kankanawadi Ayurveda Mahavidyalaya, Shahapur, Belagavi. Hydro-alcoholic extraction was carried out using a Soxhlet apparatus with 70:30 ethanol-water ratio, yielding 40 grams of extract from 150 kg of *Palasha Twak* powder., 0.5 gm and 1 gm of extract were mixed with 10 gm of ointment base to prepare 5% w/w and 10% w/w formulations. 10% w/w ointment was selected based on its physical characteristics. Results showed that the ointment had a dark brown color, a slightly astringent odour and a pH value of 6.40. The ash value was 8.316%, with no microbial load detected. The study concludes that developing ointments from herbal extracts like *Palasha twak* offers significant therapeutic and cosmetic benefits while being a cost-effective and environmentally friendly option for skincare.

Keywords: *Palasha, Twaka, Butea monosperma* Lam, Extraction, Ointment.

Introduction

Butea monosperma Lam., commonly known as *Palasha* or the "Flame of the Forest" is a significant plant in traditional medicine, particularly in Ayurveda, belonging to the Fabaceae family, it is renowned for its therapeutic properties, including wound healing, anti-inflammatory, anti-diabetic, and anti-hemorrhoidal actions. Various parts such as *twaka* (bark), *pushpa* (flowers), *beeja* (seeds), and *niryasa* (exudates) are used in medicines (1). Bark, possess *Kashaya* (astringent), *tikta* (bitter), and *katu* (pungent) *rasa* (tastes), *ruksha, laghu guna* (dryness, light properties), *ushna veerya* (hot potency) and *katu vipaka* (pungent metabolism) that aids in mitigating imbalances in *kapha* and *vata* doshas (2). Additionally, it exhibits therapeutic effects like *vranashodhaka* (wound purification), *vranaropaka* (wound healing) (3), *mootrala* (diuretic), *krimighna* (anthelmentic) and alleviation of haemorrhoids (4), making it an essential ingredient in natural remedies. It is used in treatment of diseases like *prameha* (Diabetes), *Arsha* (Haemorrhoids), *Atisar* (Diarrhoea), *Kushta* (Skin diseases), *Gulma* (Tumour), and *Udarroga*(abdominal disorders)(5). Despite its numerous benefits, the preparation of *Palasha twak avachurnana* (bark powder), presents challenges in terms of procurement and processing. This has led to the development of alternative formulations such as ointment, which can be applied topically for localized treatment, enhancing the plant's accessibility and therapeutic potential. The goal of this study is to develop and evaluate *Palasha twak* extract ointment, providing a practical application of its healing properties. By focusing on the formulation of this herbal ointment, the research aims to assess its physicochemical properties, efficacy, and safety in a pilot study, thereby contributing to the growing interest in plant-based dermatological treatments.

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Materials and methods

Materials: Soxhlet apparatus, weighing machine, heating mantle, glass rods, kidney tray, spatula, glass, a pair of gloves, mask, heating mantle, glass bowls, spatula, weighing machine (small scale), stirrer, packaging material, sealing machine.

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Methods: Collection of *Palasha twak*: The drug required for the study was procured from GMP certified KLE Ayurveda Pharmacy and was authenticated at Central Research Facility, AYUSH Department approved, Ayurveda, Siddha, Unani Drug Testing Laboratory, Shri B M Kankanawadi Ayurveda Mahavidyalaya, Shahapur, Belagavi, Karnataka.

Development and Preparation of ointment (6)

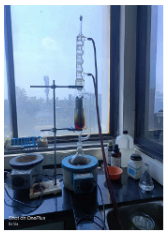
Preparation and development of *Palasha twak* ointment was carried out in below mentioned steps;

- **Extraction from raw drug:** Authenticated drug was subjected to hydro-alcohloic extraction with a ratio of 30:70 water and ethyl alcohol by using Soxhlet apparatus. Total 40 gm of extraction obtained out of 150 gms of *palasha twak yavakuta churna* (coarse powder of bark) as shown in Figure 1.

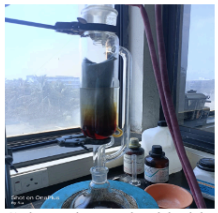
Figure 1: Showing Extraction of Palasha twak

Coarse powder of *Palasha twak*

Preparation of Thimble



Soxhlet apparatus



Colour change in thimble

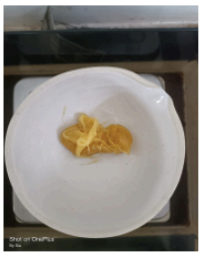
Extract obtained

- **Preparation of Base:** 85gm of soft paraffin, 5gm hard paraffin, 5gm of wolf fat, 5 gm of Ceto stearyl alcohol was mixed homogenously using rotary evaporator, for 100gm of base preparation as shown in Figure 2.

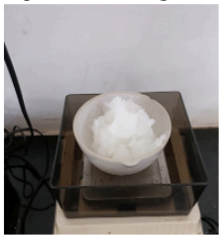
Figure 2: Showing preparation of ointment base

85gm of soft paraffin

5gm hard paraffin



5gm of wolf fat,



5 gm of Ceto stearyl

Alcohol was mixed homogenously using

- **Ointment Preparation**: For pilot study 0.5 gm and 1gm of extract was mixed homogenously with 10 gm of ointment base separately to make 5% w/w and 10% w/w ointment. All ingredients of the ointment base were mixed and heated gently, with stirring until homogenous and then stirred until cooled on the surface of the ointment slab to make ointment of uniform consistency and smooth texture (7). 10% w/w ointment was chosen for the study according to its physical analysis as shown in Figure 3.
- **Packaging** was done in GMP certified KLE's Ayurveda Pharmacy, Khasbag, Belagavi and storage was done at MRC, KLE's Ayurveda Hospital, Bealgavi. Figure 4.

Figure 3: Preparation of *Palasha Twak* ointment	**FIgure 4: Packaging of *Palasha Twak* ointment**
	

Evaluation of Ointments (8): The ointments were evaluated for their physical properties such as their spreadability, extrudability and pH as well as their appearance.

- **Spreadability**: A simple spreadability test was performed: 1.0 g of the ointment was placed in a 10-mm-diameter circle on a glass plate. After being sandwiched with another glass plate, the sample was pressed with fixed 500 g weight. Spreadability was determined as a difference in diameter values before and after 30 seconds on a millimetre scale placed under the lower glass plate.
- **Extrudability**: Tube extrudability was determined by measuring the amount of ointment extruded from the tube when a pressure was applied on the tube. The larger amount extruded the better extrudability. Extrudability was determined in terms of weight in grams required to extrude 0.5 cm of ribbon of ointment in 5 seconds.
- **Homogeneity Test:** Test is done by applying an ointment to a piece of glass. Homogeneous ointment marked by absence blobs on the smearing, flat structure and has uniform colour of the dot initial smearing until the point end of basting.
- **p^H Determination:** The p^H of ointments were determined by an extraction method where 2.5 g of ointment was suspended in 50 ml distilled water in a 100 ml beaker, heated in a water bath at about 70 ″C for 10 min, and then cooled to room temperature. The suspension was vigorously stirred for 10 min on magnetic stirrer to prompt extraction before phase separation resulting in supernatant extract. The p^H was measured using a p^H-200 Waterproof p^H Meter (9).
- **Sensory Evaluation:** Sensory parameters such as colours, odours and textures of ointments were

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evaluated at different storage conditions i.e. 40 ± 2^{0}C, 75% RH ±5% RH for three months. A standardized quantity of 1 g of ointment was applied over the dorsal surface of the left hand and sensory properties were evaluated as **Excellent**: smooth, homogeneous texture, light brown colour, characteristic odour. **Satisfactory**: smooth texture, non-consistency, dark brown colour, characteristic odour. **Unsatisfactory**: rough texture, visible solid particles, non-consistency, light brown colour, rancid odour (10).

- **Microbial Limit Test:** Presence or absence of specific objectionable pathogens like: E. coli, Salmonella sp., Pseudomonas aeruginosa, Staphylococcus aureus were evaluated by using known standardized protocol.
- **Membrane Filtration method:** The membrane filtration method is used for specimens with antimicrobial substances. Use 0.45 µm pore size filters (50 mm diameter), sterilize all equipment, and filter 10 mL of a 20 mL test fluid. Wash membranes with 100 mL of buffer or test medium, adding polysorbate 80 for fatty substances. Place one filter on Soybean-Casein Digest Agar (for bacteria) and the other on a fungal medium. Incubate for 5 days at 30-35°C (bacteria) or 20-25°C (fungi), then count colonies. Shorter incubation times may be acceptable (11).

Observations and Results

Table 1: Showing Analytical evaluation of *Palasha Twak* ointment

Sl.No	Particulars	Observations
1	Colour	Dark brown
2	Form	Ointment
3	Odour	Characteristic
4	Spreadability	40mm
5	Extrudability	Passes
6	Homogeneity	Passes
7	pH	6.40

Microbial limit test

Table 2: Showing Microbial limit test in *Palasha Twak* ointment

Sl. No.	Microbes	Observations
1	**E. Coli**	Absent
2	**S. Aureus**	Absent
3	**P. Aeruginosa**	Absent
4	**S. Abony**	Absent

Table 3: Showing Total bacterial and fungal growth in *Palasha Twak* ointment

Sl. No.	Microbes	Limit	Results
1	**Total Bacterial count**	30-300 cfu/ml	No Growth
2	**Total Fungal count**	10-100 cfu/ml	No Growth

Discussion

Herbal ointments can be tailored to specific skin types, providing moisturizing, soothing, or protective benefits and they can be made from sustainable, eco-friendly ingredients, reducing the environmental impact of pharmaceutical production. Usage of antiseptic treatment for local application, along with antibiotics has become a trend to prevent wound contamination, although they do not appear to help the natural healing process.

Hence, here an attempt has been made to prepare *Palasha Twak* Ointment which is the cost effective, safe, natural, reducing the risk of adverse reactions, can provide a holistic approach to healing, addressing multiple symptoms and promoting overall well-being.

Palasha (*Butea monosperma* Lam.) is a medium-sized deciduous tree belongs to Fabaceae family. It has astringent, bitter, and pungent tastes, hot in potency and undergoes pungent metabolism. *Palasha* is known for its ability to alleviate *kapha* and *vata*, purify and heal wounds, act as a diuretic. It is used in conditions like dysuria, hemorrhoids, and microbial infections.

Palasha Twak ointment is Dark brown in colour, slightly astringent in taste, and possessing characteristic - odour, its physicochemical analysis shows Ash value - 8.316%, acid insoluble ash - 0.946%, Water soluble extractive - 17.579% and Alcohol soluble extractive - 12.785%. p^H value - 6.40 and microbial load- Nil. It indicates that when the ointment was subjected for its physico-chemical analysis it shows less inorganic components and acidic nature of the drug, suggesting that the ointment may be easily absorbable and may act as antimicrobial, which in turn encourages its application to heal any type of wound without any complications and cost effective.

Conclusion

Developing a *Palash Twak* ointment offers an effective and convenient solution for wound healing, overcoming the challenges of crude drug use by providing a standardized, easy-to-apply formulation that ensures better therapeutic outcomes and utilizes readily available raw materials.

References

1. Chunekar Krushnachandra. Bhavprakash Nighantu, 7th ed., Varanasi; Chaukhamba Bharati Academy, 1986; 536pp.
2. Chunekar Krushnachandra. Bhavprakash Nighantu, 7th ed., Varanasi; Chaukhamba Bharati Academy, 1986; 537pp.
3. Shastri K, Chaturvedi G, Charaksamhita Hindi Commentary Of Charaksamhita, Vidyotini, Sutra Sathana 4, Vol I, Reprint ed., Varanasi: Chaukhambha Bharti Academy, 2011.
4. Shastri Ambika Dutta, Sushrut Samhita, reprint, Varanasi; Chaukhambha sanskrita sansthana, 2009; 182-190pp.
5. Shastri Ambika Dutta, Sushrut Samhita, reprint, Varanasi; Chaukhambha sanskrita sansthana, 2009; 190pp.

6. British Pharmacopoeia. Department of health and social security Scottish home and health department. 2nd ed. UK: Office of the British Pharmacopoeia commission; 1988. p. 713.
7. Ansel HC. Introduction to pharmaceutical dosage forms. 4th ed. Philadelphia: Lea and Febiger; 1985. p. 299–301.
8. Maesaroh, Imas & Pratiwi, Daniar & Agustin, Leli. (2020). Ointment Formulation and Test Safety from Sapodilla Manila Leaf Extract (Manilkara zapota L.) with Variation of Ointment Base as an Ulcer Medicine. Indonesian Journal of Pharmaceutics. 2. 14. 10.24198/idjp.v2i1.25770.
9. Ilievska, Biljana & Loftsson, Thorsteinn & Hjálmarsdóttir, Martha & Asgrimsdottir, Gudrun. (2016). Topical Formulation Comprising Fatty Acid Extract from Cod Liver Oil: Development, Evaluation and Stability Studies. Marine Drugs. 14. 105. 10.3390/md14060105.
10. Ilievska, Biljana & Loftsson, Thorsteinn & Hjálmarsdóttir, Martha & Asgrimsdottir, Gudrun. (2016). Topical Formulation Comprising Fatty Acid Extract from Cod Liver Oil: Development, Evaluation and Stability Studies. Marine Drugs. 14. 105. 10.3390/md14060105.
11. European Pharmacopeia (Ph. Eur.), General Chapter 2.6.12: Microbiological Examination of Non-Sterile.

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