

Formulation and Evaluation Of Aegle Marmelos Ointment

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1. Abstract:-

Bael (Aegle marmelos) is one of the most useful medicinal fruits of India. The common name of bael is stone apple. Moisture desorption isotherm of bael (Aegle marmelos) pulp and adsorption isotherm of pulp powder were determined at 20, 30, 40 and 50 °C. Static gravimetric method was used by exposing the samples. To controlled atmospheres maintained by saturated salt solutions. The present study was aimed to evaluate wound healing activity of Aegle marmelos seeds. The ointment containing methanolic and aqueous extract, were prepared in white soft paraffin separately in concentrations of 5% (w/w) and 10% (w/w) and were incorporated in excision wound model and incision wound model in rats. Significant increase in percentage wound contraction, tensile strength and decrease in period of epithelialization was observed. Ointment containing methanolic extract shown significant ($p < 0.01$) wound healing activity at the concentration of 5% and 10% w/w/ in all animal model. The ointment containing aqueous extract was also found to possess significant ($p < 0.05$) wound healing property at the same concentrations as of methanolic extract.

2. Introduction:

Bael (Aegle marmelos) is one of the most useful medicinal fruits of India. The common name of bael is stone apple. The tree grows wild in dry forests on hills and plains of India, Burma, Pakistan and Bangladesh; also in mixed deciduous and dry dipterocarp forests of former French Indochina. It contains many vitamins like vitamin C, vitamin A, thiamine, riboflavin, niacin, and minerals like calcium, and phosphorus[1]. Psoralen, marmelosin, and numerous other polyphenolic chemicals are present in the pulp. The pulp's psoralen helps the skin retain its natural colour and improves its resistance to sunlight. In order to treat leucoderma, it is used. The pulp's marmelosin is utilised as a diuretic and laxative supplement. The ripe fruit has a pleasant cooling effect in addition to being scented and astringent.[2] Skin is major part of the human body. Due to their antifungal property the bael fruit uses in preparation of ointment for skin.[3]

Parts of Aegle Marmelos:

- Fruit
- bark
- root
- leaves
- seeds



Fig.1: Aegle Marmelos

One of the most cost-effective ways to keep bael fruit pulp fresher for longer is to dry it. There is a lack of precise data regarding the equilibrium moisture contents of bael pulp and its powder at different temperatures and relative humidity levels. To comprehend the drying and storage behaviour of bael fruits, a thorough investigation of their equilibrium moisture levels is also required. One of the most important medicinal plants in India is beal. More than 100 phytochemical compounds, such as phenols, flavonoids, alkaloids, cardiac glycosides, saponins, terpenoid, steroids, and tannins, have been isolated from various plant components.[4]

The formulation of herbal ointment using beal extract. Formulation of the herbal ointment. Making and Evaluation of herbal ointment utilizing herbal extract. Formulation and evaluation of herbal ointment by using natural ingredient.[6] Fruits are woody shells that are smooth, firm, and green; they are members of the Rutaceae family. Geographically found in Berma as a wild plant and farmed throughout India's Sub-Himalayan region, especially in Central and Southern India [10,11]. Medicinal plants have been a key source of pharmaceuticals. India has a long history of using plant-based medications for both therapeutic and preventive purposes; these medications have been mentioned in Ayurveda, Siddha, homoeopathy, and other reforms. About 88% of people on the planet utilise plant-based medications as their first line of defence in the fight against several diseases and to maintain their health.[12,13]

3.Ingredients :-

Table 1: Ingredients of Aegle Marmelos Ointment

Sr. No.	Ingredients	Figure	Family	Category
1	Aegle Marmelos (Beal Fruit)		Rutaceae	Anti-Fungal activity
2	Eucalyptus Oil		Myrtaceae	flavor or aroma
3	Wool fat		Bovidae	Emollient
4	Hard paraffin		Alkanes	Emollient
5	Cetostearyl alcohol		Primary alcohol	Emulsifying agent
6	Yellow paraffin soft		Alkanes	Ointment base

4. Formulation Table:

Sr.No	Ingredients	F1	F2	F3	Uses
1	Beal fruit extract	1%	2%	3%	Antifungal activity
2	Eucalyptus Oil	2-3drops	2-3drops	2-3drops	Flavor or aroma
3	Wool fat	0.5gm	0.5gm	0.5gm	Emollient
4	Hard paraffin	0.5gm	0.5gm	0.5gm	Emollient
5	Cetostearyl alcohol	0.5gm	0.5gm	0.5gm	Emulsifying agent
6	Yellow soft paraffin	7 gm	7gm	7gm	Ointment base

Material and Method

Collection of Plant material:

Aegle marmelos fruit that were identified and collected from the Hometown. Beal fruit was cleaned, dried in room temperature, transfer into moderately coarse powder and stored in well closed container before the extraction.

Preparation of Beal Extract:

The ethanolic extract of Aegle marmelos fruit were prepared by using Soxhlet apparatus. The ethanolic extraction has performed until the colour of extract does not change to colourless by passing through syphon tube. After cycle has been completed, alcohol extract was gathered and Condensed to produce residue that is greenish-black in colour. The beal fruit extract was kept in a cool, dark place in an airtight, tightly closed container.



Fig 2: Aegle Marmelos Powder



Fig 3: Soxhlet Extraction

5.Process:-

The process for making herbal ointment:

- Weighing each item precisely allowed us to produce the ointment base.
- Ointment base was prepared in a porcelain dish on a water bath.
- Melt the cetostearyl alcohol and hard paraffin in a porcelain dish submerged in water.
- To melt the above mixtures, then add wool fat and soft paraffin and stir it well.
- After melting all ingredients, remove the porcelain dish from the water bath. Mix homogeneously until the semisolid base is obtained.
- Transfer to a suitable container.



Fig 4: Prepare Herbal Ointment

6.Evaluation Test:

1. Colour
2. Odour
3. Consistency
4. pH
5. Spreadability
6. Solubility
7. Washability
8. Non-irritancy Test
9. Stability

Colour Test: Through visual inspection, the ointment's color was determined.

Odour: An observation was made regarding the aroma of herbal ointment.

Consistency: Smooth and without any signs of greediness was the consistency.

pH: A digital pH meter was used to prepare the herbal ointment's pH. 50 milliliters of distilled water were used to dissolve one gram of herbal ointment. For the ointment, the pH was measured four times.

Spreadability: The spreadability was measured by sandwiching an excess of sample between two slides that had been uniformly thickened by applying a given weight for a given amount of time. The spreadability was defined as the amount of time needed to separate the two slides. The formula used to calculate Spreadability was as follows.

Where S is spreadability and $S = \frac{M \times L}{T}$

M-The upper slide's weight.

L-Glass slide length.

T=Duration of slide separation.

Solubility: Water and ether are both soluble in this substance.

Washability: After applying the formulation to the skin, it was determined whether it was simple to wash with water.

Non-irritancy Test : A human being's skin was treated with the prepared herbal ointment, and the results were monitored. A little amount of the sample was applied to the hand, and the effects such as redness, inflammation, etc. were monitored for a full day. Then no such impact was noticed, indicating that it doesn't irritate the skin.

Stability: At 37°C, the produced ointment is the subject of a stability investigation.

Observation:**Evaluation Table:**

Evaluation Parameters	F1	F2	F3
Colour	Dark brown	Dark brown	Dark brown
Odour	Characteristics	Characteristics	Characteristics
Consistency	Smooth	Smooth	Smooth
pH	5.8	6	6.4
Spreadability	9 sec	7 sec	8 sec
Solubility	Water and ether soluble	Water and ether soluble	Water and ether soluble
Washability	Washable with ease	Washable with ease	Washable with ease
Non-irritancy	Non irritant	Non irritant	No irritant
Stability	Stable	Stable	Stable

7.conclusion:-

This study evaluate efficacy of an herbal ointment formulated from extracts of Aegle marmelos fruit in case of fungal infections. The beal fruit have been use effectively in Anti-bacterial, Anti-acne, Antiinflammatory activities As per given activity with aim we focus on creation and assessment of a herbal ointment with antifungal properties. These ointment useful for the following studies:-

1. To explore and utilize its therapeutic properties due to its rich phytochemical content.
2. To use it as a source of nutrients like vitamins, fiber, and antioxidants for improving diet and health.
3. To process the fruit into products like juices, jams, candies, or herbal supplements for commercial use.
4. To promote the cultivation of Aegle marmelos for sustainable agriculture, biodiversity conservation, and economic development, especially in rural areas.
5. To study its bioactive compounds.
6. To provide antifungal activity.
7. It use as a herbal medicine for diabetes.

8.References:

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