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FORMULATION AND EVALUATION OF HERBAL PAIN RELIEF BALM

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ABSTRACT
Modern life is stressful, and tension headaches are one result of that stress. Cosmetics have great demand since ancient time, now a days, a focus has been shifted more towards derived cosmetic products. Not only cosmetic products, but also to the skin products due to their ease of application among all dermal drug delivery products, pain balm formulation are preferably used so as to get the faster local effect. There has been an increasing focus on development of new routes of drug administration to provide tailored treatments for patients, without decreasing efficacy of analgesia, in proportion to the progression of the knowledge of pain mechanisms. While acute pain acts as an alarm, chronic pain is a syndrome requiring meticulous selection of analgesic drugs of high bioavailability for long-term use. Such criteria are challenges that topical medications aim to overcome, allowing progressive delivery of active component, maintaining stable plasma levels, with a good safety profile. Dashamoola inhibits prostaglandin synthesis to relive joint pain and inflammation, it also improves glucosamine level to lubricates and rejuvenate joint tissues Shallaki contains boswellic acid, which can help reduce inflammation and pain by targeting enzymes that release pro-inflammatory chemicals in the joints. Shallaki also has antiinflammatory properties that can help reduce swelling and pain in arthritis patients. The present research study is about to formulate the topical herbal balm for analgesic and antiinflammatory activity

KEYWORDS: *Anti inflammatory activity Dashmoola oil, shallaki oil, camphor, rosemerry oil,Petrolium jelly,Sodium Benzoate, Herbal balm*

Pain has much in common with other sensory modalities. First, there are specific pain receptors. These are nerve endings, present in most body tissues, that only respond to damaging or potentially damaging stimuli. Second, the messages initiated by these noxious stimuli are transmitted by specific, identified nerves to the spinal cord. The sensitive nerve ending in the tissue and the nerve attached to it together form a unit called the primary afferent nociceptor. The primary afferent nociceptor contacts second-order pain-transmission neurons in the spinal cord. The second-order cells relay the message through well-defined pathways to higher centers, including the brain stem reticular formation, thalamus, somatosensory cortex, and limbic system. It is thought that the processes underlying pain perception involve primarily the thalamus and cortex. The pain balm works on the counter irritancy principal the where the instead of relieving the pain, the pain sensation is suppressed by causing the irritation to the point where formulation has been applied. the balm in common sense is defined as semisolid formulation and which is to be applied externally. Pain balm is such formulation that is intended to be used for the relief of mild to moderate rate pain. According to NCBI, the prevalence of knee pain has increased by 66% since 1974, even after adjusting for age and BMI. There are Some possible reasons why knee pain may be increasingBeing overweight, Overusing your knee, Aging, Arthritis, and Other medical conditions. Many types of minor knee pain respond well to self-care measures, such as physical therapy, knee braces, and exercise. Low-impact exercises like swimming, cycling, and walking can help strengthen knees and reduce knee pain symptoms. Non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, to help with pain, inflammation, and swelling. NSAIDs can cause serious side effects, some of which may be life-threatening. NSAIDs may interact with other medicines and cause unwanted effects. Topical NSAIDs have a lower risk of stomach upset and heart problems than oral NSAIDs. A review found that topical diclofenac and topical ketoprofen can provide good levels of pain relief in osteoarthritis, but only for about 10% more people than get this result with topical placebo. Balms can relieve pain by absorbing methyl salicylate and camphor through the skin. Methyl salicylate acts as an analgesic. Camphor acts as a rubefacient, which produces a cool sensation and also acts as a mild local anesthetise.

Drug Profile : 1. Dashamoola Oil
Dashamoola, as the name signifies is the potent magical concoction of ten dried roots of ten different plants, which have been widely used in Ayurveda since ages due to its amazing health benefits. It possesses those qualities that work in tandem for effectively offering ultimate remedies for numerous health conditions, especially the ones related to nerves, muscles, bones, joints and lungs. The word Dashamoola is Sanskrit terminology, where 'Dasha' means ten and 'moola' means root. ll it Dashamula, Dashmulam or Dashamul, this incredible herbal remedy is not only used for pain disorders and inflammatory diseases including osteoarthritis, rheumatoid arthritis and gouty arthritis but also frequently used as an enema as it helps to alleviate constipation, anorexia, abdominal lump, bloating, flatulence, lower back conditions and inflammation in the pelvic and sacral areas.

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Table no.01-Composition of *Dashmoola Taila*

Name of Ingredients			Part used	Quantity
Sanskrit	**English**	**Botanical**		
Bilwa	Stone apple	*Aegle marmelos* L.	Root	50 gm
Agnimantha	Dusky Fire Brand Bark	*Premna mucronata* Roxb.	Root	50 gm
Shayonak	Indian trumpet tree	*Oroxylum indicum* Vent.	Root	50 gm
Patala	Trumpet	*Stereospermum suaveolens* Roxb.	Root	50 gm
Gambhari	Coomb teak	*Gmelina arborea* Roxb.	Root	50 gm
Shalparni	Sal leaved Desmodium	Desmodium gangeticum (L.) DC.	Root	50 gm
Prashnaparni	Slight-of-hand	*Uraria Picta* Jacq.	Root	50 gm
Brahati	African egg plant	*Solanum indicum* Linn	Root	50 gm
Kantakari	Yellow - Berried Nightshade	*Solanum surattense* Burm. f.	Root	50 gm
Gokshur	Puncture Vine	*Tribulus terrestris* L.	Root	50 gm
Nirgundi	Five-leaved chaste tree	*Vitex negundo Linn.*	Leaves	500 gm
Sarshap	Field mustard	*Brassica comprestis* L.	Root	2 Liter

2. Shallaki Oil

Botanical Name: ***Boswellia serrate*,Family:** Burseraceae. Shallaki is one of the ancient herbs in Ayurveda. It is a moderate-large sized branching tree. Shallaki is a holy plant which is widely used in traditional medicine and is considered to be an important part of Ayurvedic medicine. Synonym is Boswellia Serrata, Kundur, Salai, Dhup, Gugali, Chitta, Guguladhuph, Parangi, Saambraani. Arthritic patients can take 1-2 Shallaki tablets along with water to get relief from swelling in the joint. It reduces swelling as well as stiffness in the inflamed joints due to its anti-inflammatory property. Consuming Shallaki juice (before taking food) on a regular basis also helps improves brain function as it prevents cell damage caused by free radicals due to its antioxidant activity. Chemical Composition of ShallakiThe extract of Shallaki contains sugars, essential oil, volatile oil, terpenoids, and several pentacyclic triterpene acids like -boswellic acid.

3. Camphor

Scientific name: Cinnamomum camphora,Synonym: Alcanfor.,Family: Lauraceae.

Chemical constituents: D-camphor (51.3%), 1,8- cineole (4.3%), and alpha-terpineol. Uses: Provide relief from cold cough, chest congestion, bronchitis and asthma. Improves blood circulation and help to curb muscular and joint aches. Powerful analgesic oil that produces a cooling sensation to numb pain and a warming sensation to increase circulation.

4. Rosemary Oil

Scientific name: Rosmarinus officinalis. **Synonym**:Rosmarinus angustifolius Mill. **Family**: Lamiaceae. **Chemical constituents:** 1,8-cineol (38.5%), Camphor (17.1%), limonene (6.23%), camphene(6.00%) and linalool.

Uses : Reduce pain and Inflammation ,Relieve Stress, and Anxiety, Treat respiratory problems, Heal your skin, Combat Gastrointestinal.

5. Methyl Salicylate

Methyl Salicylate is a colorless yellowish or reddish liquid with odor of wintergreen. colourless or yellow-to-red oily liquid with characteristics .

Boiling Point:- 432° F at 760 mm Hg, **Melting Point:-** 16.5° F

Solubility:- less than 1 mg/mL at 66° F Water Solubility- Slightly soluble chloroform, ether; miscible with alcohol, glacial acetic acid

Method of preparation

Oil is water-steam distilled from leaves charged into the still and allowed to macerate for several hr to hydrolyze gaultheria glycoside (methyl salicylate + glucose). Distillation from 5-6 hr yields approximately 0.7% essential oil. Often adulterated by co-distilling sweet birch bark. mostly prepared by esterification of salicylic acid with methanol. Product of commerce is about 99% pure.

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Material and method

1. **Petroleum Jelly**

Petroleum jelly hit the market almost 150 years ago. It's still a favorite of dermatologists. That's because it seals water into your skin. That's good for your wounds because they need amoist place to heal. It may take up to twice as long for dry injured skin to get better. This oily moisturizer may also ease the redness of a new scar and lower your chances of infection. It also won't burn when you put it on.

2. **Bees wax**

Scientific name: Ceraalba,**Synonym**: Yellow wax,**Family:** *Apidea.*
Chemical constituents: Myricylpalmitate (80%), free cerotic acid (15%), melissic acid cerolein.
Uses: Used as Antibacterial. Antifungal. It has anti-inflammatory and anti-allergic properties.

3.Sodium Benzoate

Sodium Benzoate powder is accepted as a preservative by some of the worlds toughest natural product certification. Using sodium benzoate in shampoo and conditioner as a preservative is a safe and effective technique to protect against bacteria and mold forming the bottles.

Uses: Preservative, Sodium Benzoate is also an effective product stabilizer commonly used in pain.

Method: Weighing all the required herbal ingredients for herbal pain relieving balm preparation were accurately weighed by using digital balance**.**

4. **Turmeric**

Botanical Name: Curcuma Longa, **Family**: Zingiberaceae, **Synonym:** Curcumae longa.
Chemical constituents: Turmeric mainly contains polyphenol compounds in the form of curcuminoids. **Uses:** treat skin disorders.

Formulation of Herbal Pain Relief Balm

1. Take one container in that weigh and add 5gm of petroleum jelly, place the container in a hot plate and boil it until all the amount of petroleum jelly completely dissolved. Weigh 5ml of methyl salicylate and boil the solution in hot plate.
2. In the dissolved petroleum jelly solution weigh and add 5gm of bees wax, stir it and boil until the bees wax added completely dissolve in the petroleum jelly. .
3. Weigh 0.6m of camphor and dissolve
4. Weigh 10ml of Dashmoola oil stir the solution and boil the solution.
5. Weigh10ml of Shallaka oil, stir the solution and boil the solution.
6. Weigh 5ml of Rosmarry oil, stir the solution and boil the solution.
7. Weigh 5gm of sodium benzoate and add it to the solution, stir it well and boil the solution, for complete dissolution of the solution.
8. When all the added ingredients were completely dissolved and turns in to the liquid form then take the solution out of the hot plate and keep the herbal balm solution for cooling. Finally the prepared solution cools down and turns into a semi solid herbal balm.

Table no.02-Formulation Table

SR.NO	INGREDIENTS	QUANTITY	MEDICINAL USES
1	Dashmoola oil	10ml	Pain reliever
2	Sallaka oil	10ml	Relieves arthritic pain
3	Bees wax	5gm	Antifungal, Antibacterial
4	Petroleum jelly	5gm	Relieves dry skin, healing
5	Camphor	5gm	Relives cough
6	Methyl salicylate	5gm	Analgesic, skin absorbent
7	Sodium benzoate	5gm	Preservative

Evaluation of prepared herbal formulation:

1. **Physical parameters:**

Clarity and colour was checked by naked eyes against white background, the odour was smelled.

2. ***PH***

The PH of the prepared formulation was determined by using digital PH meter by dipping the glass electrode completely in to the gel system to cover the electrode. The measurement was carried out in triplicate and the average of the three readings was recorded.

3. **Phase separation**

The prepared balm was transferred in a suitable wide mouth container. Set aside for storage, the oil phase and aqueous phase separation were visualizing after 24h.

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4. Viscosity

Viscosity of balm was determined using brook filled viscometer (S-62,model LVDV-E)at 25°C with a spindle speed of the viscometer rotated at 12rpm.

5. Spredability

Two sets of glass slides of standard dimensions were taken. The herbal balm formulation was placed over one of the slides. The other slides was placed on the top of the gel, such that the gel was sandwiched between the two slides in an area occupied by a distance of 7.5cm along the slides. Hundred g weight of gel was placed on the upper slides so that the gel was between the two slides was pressed uniformly to form a thin layer. The weight was removed and the excess of gel adhering to the slides was scrapped off. The two slides in position were fixed to a stand with out slightest disturbance and in such a way that only upper slides to slip off freely by the force of weight tied on it. A20 g weight was tied to the upper slide carefully. The time taken for the upper slide to travel the distance of 7.5 cm and separated away from the lower slide under the influence of the weighed was noted. The experiment was repeated for three times and the mean time was taken for calculation.

6. Patch test

Apply the product to a small patch of skin where a person is unlikely to accidentally wash or rub it away. Good areas may included the inside of the arm or bend of the elbow. Apply the product to a quarter-sized patch of skin. A person should apply the product as thickly as they would when using it regularly. Leave the product on the patch of skin for as long as it would normally be on the skin. If a person is testing a product that they would usually wash off, such as a cleanser, they should keep the patch on for 5min or long as the instructions advice. Repeat the patch test twice a day for between 7-10 days. A reaction may not happen immediately, so it is important to continue applying the product for this length of time. If a persons skin react to the product, they should wash it off as soon as possible and stop using it. a person can use a cool compress or petroleum jelly to relieve the skin if needed.

Collection of Raw Material

All the material are collected from market and the natural material used in present study i.e. Dashmoola oil, shallaki oil, Camphor oil, Methyl Salicylate, beeswax, and Rosemary oil Beeswax, rosemary oil, Camphor and were purchased from the market.

Methods of data collection Observation method of the data collection will be employed for the collection of data for the present dissertation work. Data on the Formulation and Evaluation of herbal pain reliving Balm will be collected from various standard journals and other sources like research literature databases such as Springer, Research Gate, Google scholar, Yahoo Gov and various ayurveda and herbal formulation book etc.

Results and discussion:

The ysicochemical parameters of the prepared balm were determined parameters such as colour, odour, appearance and PH were tested. The formulations exhibited good in appearance characteristic as well as PH was found in the range 7.0 which is the desired PH ofthe skin.

Table no.03-Result of organoleptic test for herbal balm

Sr.no	Organoleptic characters	Herbal balm	Marketed balm
1	Formulation	Pain balm	Pain balm
2	Colour	Yellowish	white
3	Odour	Fragrant	Fragrant
4	Appearance	Good	Smooth
5	State	Semi solid	Semi solid

Table no.04 Evaluation result of herbal pain balm

SRNO.	PARAMETERS	RESULTS
1	PH	6.5
2	Spreadability	7.4
3	Phase separation	No phase separation
4	Viscosity	39010cps
5	Patch test	Non allergenic

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Table no.05 Stability studies

SRNO.	FORMULATION	PERIOD	COLOUR	PH	ANY OTHER
1	**Pain balm**	Room Temperature	Yellowish	7.0	Nil
2		25°C± 2°C/ 60% ±5% RH	Yellowish	6.8	Nil
3		30°C±2°C/ 65% ±5% RH	Yellowish	6.7	Nil
4		30° C±2°C65% ±5%RH	Yellowish	6.5	Nil

SUMMARY CONCLUSION

Herbal balm was prepared by using hot processing technique and were found to be without particles transparent components which are used in formulation are having good compatibility without any significant changes.Dashmoola oil and shallaki oil have relieving pain property.The prepared formulation showing good physical characteristics.Further evaluated by various evaluation parameters such as ph, extrudability, spreadability, viscosity, patch test and gives good result. Based on the study research it can be concluded that herbal components can be effectively formulate as in the form of balm by using hot Processing technique which having excellent pain-relieving property.

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