

Formulation and Evaluation of herbal antiseptic burn cream.

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Abstract - The main goal of present research was to formulate and evaluate burn healing activity of cream which was prepared from herbal plants. Herbal medicines has become a global important for both medical and economical. The burn cream is prepared from herbal plants are more efficacious than synthetic medicines and which shows some adverse effects. This study found that skin healing property of aloe Vera and anti-inflammatory property of turmeric so the combination of this two herbs is amazing.

Keywords - Herbal burn cream formulation, evaluation, aloe Vera, tumeric, anti-inflammatory

I. INTRODUCTION

Skin is largest organ of human body that protects the internal organs from the external environment and prevents body dehydration. It can be traumatized by burn injuries, chronic wounds, excision, tumors and other dermatological conditions.[1] Burn wound generally termed as physical injury that cause opening and breaking of skin.[2] The burn wound consist of physical damage (pressure ulcer), thermal damage (burns), mechanical damage (cut, abrasion laceration) etc. Any type of wound healing is a process of cell contraction, movement, re-adhesion after injury. It also involves platelet aggregation, blood clotting, formation of fibrin, an provocative response to damage, angiogenesis and re-epithelization.[3]. Skin consist of two layers i.e. epidermis and dermis that are supported by number of underlying structures. This organ has multiple functions. It is barrier between the external and internal organ which are protected against environment, trauma, chemicals, microorganisms mechanical stress and radiations.[4] Burn wounds are classified into three subgroups according to the depth as first degree (superficial), second degree (partial thickness) and third degrees (full thickness).[5] and antiseptic activity. Aloe Vera, zingier officinalis showed the best burn wound healing activity. Flavonoids, alkaloids, saponins and phenolic compounds were active constituents present in different herbs facilitating wound closure. Glycosides including madecassoside and asiaticoside and proteolytic enzymes were among the main active components. Phytochemicals represented positive activity at different stages of burn wound healing process by various mechanisms including antimicrobial, anti-inflammatory, antioxidant, collagen synthesis stimulation, cell proliferative and angiogenic effect. Overall, several herbal medicaments have shown marked activity in the management of wounds- especially burn wounds- and therefore can be considered as an alternative source of treatment. Furthermore, various natural compounds with verified burn-induced wound healing potential can be assumed as future natural drugs.[6]

❖ Types of burns :

Burns are classified as first second, third-degree or fourth-degree depending on how deeply and severely they penetrate the skin's surface.

1. First degree
2. Second degree
3. Third degree
4. Fourth degree

1. First degree (superficial burns):

First degree burns affect only outer layer of skin, epidermis. The burn site is red, painful, Durand with no blisters. Mild sunburn is an example. Long term tissue damage is rare and often consist of an increase or decrease in skin color.

2. Second degree (partial thickness):

Second degree burn involves the epidermis and part of lower layer of skin, the dermis. The burn site looks red, blistered and may be swollen and painfully.

3. Third degree (full thickness) burn:

Third degree burn destroy the epidermis and dermis. They may go into the innermost layer of skin, the subcutaneous tissue. The burn site may look white or blackened and charred.



4. Fourth degree burn:





Fourth degree burn go through the both layers of skin and underlying tissue as well as deeper tissue , possibly involving muscle and bone. There is no feeling in the area since the nerve endings are destroyed.





II. OBJECTIVES :

- 1) To formulate wound herbal antiseptic burn cream by using ingredients such as aloe Vera and turmeric.
- 2) Evaluation of herbal antiseptic burn cream such as Appearance, consistency, spread ability, pH, skin irritation test and antimicrobial activity.

Table no: 1. Drug and excipient profile

Sr.no	ingredient's	Figure	Category
1.	Aloe Vera		Aloe is used as anti-inflammatory and it promotes circulation and inhibits growth of bacteria.
2	Turmeric		It has anti-bacterial ,anti-inflammatory and anti-viral property used for healing process in burn treatment

3	Castor oil		<p>Anti-inflammatory and pain reducing property. It stimulate growth of new tissues. Help s to maintain moisture in skin.</p>
4	Liquid paraffin		<p>It is used as hydrating and cleansing agent .</p>
5	Cetosteryl alcohol		<p>It is used as emollient which softens and moisture skin and decreases itching</p>
6	Alum		<p>It is used as astringent and anti-staining agent.</p>

7	Henna powder		It is used as cooling agent.
8	Glycerine		It cools and soothes the skin scratches, cuts, burns and itching. It prevent dry skin and skin irritation.
9	Lavender oil		It is used as flavouring agent. And used in massage therapy.
10.	Purified water		Solvent, conditioning agent and cleansing agent.

III. MATERIALS AND METHODS :

A. Processing of aloe Vera sap [8] –

Aloe Vera leaves were cut, washed and then sliced an inch both on upper and lower sides. The leaves were further cut and pulp was removed thereafter. The obtained pulp was further crushed in a mechanical crusher. After crushing of the pulp it was filtered in order to remove the attached fibers. The slow Vera juice thus prepared was heated at 50 – 60 °C and then treated with 2% charcoal by continuous stirring. Finally Aloe Vera sap was prepared by filtering the treated juice. The obtained sap was collected and further used.

B. Preparation of cream- the burn cream was formulated by using fusion method. In that firstly we were prepare cream base by mixing oil phase and aqueous phase and then herbal drug was *mixed*.

❖ **Preparation of cream base-**

- i. The oil phase is consisted of castor oil, cetosteryl alcohol, liquid paraffin ,glycerin which is weighed according to requirement in China dish and which were heated at 50 -60 °C and stirred on magnetic Stirrer at 400 rpm.
- ii. Aqueous phase is prepared by weighing required quantity of aloe Vera sap ,alum ,henna powder and purified water which is also heated at 50 -60 °C and stirred on magnetic stirrer .
- iii. Then add aqueous phase was added slowly to oil phase and both the phases were mixed thoroughly with constant stirring
- iv. .After 40-45 min heating was stopped and when system attained a temp of 40 degree C a few drops of lavender oil is added with continuous stirring. Finally a smooth cream was obtained.

❖ **Formula-**

Table no 2-ingredients of herbal antiseptic burn cream

Sr.no	Ingredients	Quantity (%)
1.	Aloe Vera sap	10
2.	Charcoal	0.4
3.	Castor oil	3
4.	Liquid paraffin	3
5.	Cetosteryl alcohol	2
6.	Alum	0.4
7.	Henna powder	1
8.	Lavender oil	qs
9.	Glycerine	2
10.	Purified water	q.s

IV. PHARMACEUTICAL EVALUATION OF CREAM: ^[9]

The formulation were evaluate for different pharmaceutical parameters.

A. Physical Appearance :

The formulated cream were observed for their visual appearance, transparency, color, consistency.

- Appearance : Semisolid in nature.
- Color : Dark Green.
- Transparency : Non- transparent.
- Consistency : Smooth.



Fig.no.1: Burn Cream

B. PH¹⁰ :

The pH of formulated cream were determined by using digital pH meter by dissolving 1 gm cream in 100 ml of water. The pH of the cream were also determine by dissolving the pH paper in to the above solution of cream.^[11,12]



Fig no.2: pH test

C. Consistency : [11]

The consistency of formulated creams were determined by hands. Take pinch of a cream and rubbed it with fingers.

D. Spread ability :

The spread ability of the formulated cream were determined by 500mg of the cream was sandwiched between 2 slides. A weight of 100gm was placed on upper slide. The weight was removed and extra formulation was scrapped off. The lower slide was fixed on board of apparatus and upper slide was fixed with non-flexible string on which 20g load was applied. Time taken by upper slide to slip off was noted down. [13]

E. Antimicrobial Activity :[12]

When the burn wound has been occurred then there may be chances for bacterial or microbial infection from environment and Aloe Vera and Turmeric act as antimicrobial and anti-inflammatory activity.

- **Medium:**

3.5g of Nutrient Agar is added to 100 ml distilled water and autoclaved at 121°C for 15 minutes at 15 lbs. and poured in sterile Petri plates up to a uniform thickness of approximately 4mm and the agar is allowed to set at ambient temperature and used.

- **Procedure:**

In this method the agar is melted, cooled at 45°C, inoculate with the test microorganism and then pour in the sterile Petri plate. In this method when the agar plate has solidified then hoes about 9mm in diameter in the medium with sterile cork borer ,Then another hole placed marketed formulation act as standard ,the

diameter of the zone of inhibition were measured after incubation at 30-35°C for 2 to 3 days .The diameter of zone of inhibition gives an indication of the relative activity of different antimicrobial substance against the tested microorganism.



Fig no.3: Antimicrobial activity of herbal antiseptic cream

F. Stability studies : [13]

The stability of the formulation was tested by filling the cream in plastic container and placing it in humidity chamber at 45°C and 75% relative humidity. The stability of the formulation was inspected for 3 months at interval of One month each.

G. Skin Irritation Study – [11]

In that we were take 0.5g of herbal cream and they are applied to the area of approximately 6cm² of skin and then the skin were covered with a gauze patch for 1hr it should be in contact with skin, the patch was removed after completed time duration and observation has been recorded, control animal were prepared in the same manner and 0.5g of cream using all ingredient except the herbal extract was applied to the control animal and observation were made as same as that of test animal, The cream was applied to the skin once a day for 7 days and observed for any sensitivity

V. RESULT :

- This cream could become a media to use these medicinal properties effectively and easily as simple dosage form.
- Natural Remedies are more acceptable as they are safer with fewer side effects than synthetic once, so a herbal wound healing formulation is nontoxic, safe, effective and improve patient compliance as it contain herbal ingredient. From the ancient time.
- These prepared herbal wound healing cream was evaluated for various parameters like appearance, determination of consistency, Spreadability, Skin irritation test and antimicrobial activity against streptococci Aureus.

EVALUATION PARAMETERS			OBSERVATION
Appearance			Dark Greenish colour, lavender odour,
pH			6.57
Consistency			Smooth
Spreadability			Easily spreadable
Skin irritation test			No irritation
Antimicrobial activity against			
Sr.no	Microbial strain	Standard	Test
1)	Streptococci	18mm	16mm

VI. CONCLUSION :

- The main aim of formulated herbal antiseptic burn cream was to cure or treat the burn injury
- The prepared herbal antiseptic burn cream was evaluated using various parameter and was found to be satisfied for the application to the skin where the injury has been occurs
- The cream which are prepared from natural sources they shows fewer side effect as compare to cream which are prepared from synthetic medicines.
- The natural remedies are more acceptable and which have growing demand in the market due to his lesser adverse effect, the herbal plant are more stable, efficacious and stable than synthetic formulation.
- The cream are non-irritant to the skin does not show any toxic and hypersensitive reaction.

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