International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 5 Sep - Oct 2024, pp: 08-12 www.ijprajournal.com ISSN: 2456-4494

# Formulation and Evaluation of Herbal Foot crack Cream

Sai Bhavana N, Mohammad nazim, Reshma N
*[1]Dr kv Subbareddy college of Pharmacy, Kurnool, Andhra Pradesh, India.

Date of Submission: 01-09-2024 Date of Acceptance: 10-09-2024

**ABSTRACT**
The skin on our feet is naturally dry, because in feet there is no oil gland like rest of the body. The foot skin can become dry fora number of reasons. But there are ways to prevent it, such as keeping our feet moisturized and avoiding rubbing or scratching the skin. In general, cracked heels are noticed in the elderly aged female when compared to the young age girls. The main aim our research was to develop an anti cracked heel cream formulation consisting of Neem (Azadirachtaindica ) leaf extract, Manjistha ( Rubiacordifolialinn ) root powder, Licorice ( Glycyrrhiza glabra ) root powder for the treatment of cracked heels. Prepared cracked formulation was subjected to various assessmentandthefindingsobtainwerewithinthelimits.Similarly,theseproblemsare very much pronounced in elderly female thanmale. Foot cracks open the entry path of bacteria to the body, and it may lead to promote the foot ulceration, microbial attach and lead to amputation also. The present study aims to measure the hydration property and hydration lock property of foot cream measured with help of craniometer. In addition to that, the present study deals about the wound healing properties of new developed formula. This article covers the detailed qualification of anti-microbial and anti-fungal screening and it will helpful to generate the optimum formula for the end user with respect to moisture benefit and healing property of foot cream. In the case of tested leading bench mark initially increase up to 17 unit and reach the 12.6 unit after 12 hours. This result indicates the alarm of next application of cream. Study results revealed daily two times application of foot cream maintain the skin moisture and prevent from the skin damage issues. Based on primary study results indicates that the option2samplewasbetterwhencomparedtooption1and testedbenchmarksample.

**Keywords:**Neem(Azadirachtaindica ), Manjistha ( Rubiacordifolialinn),
Licorice ( Glycyrrhiza glabra ) anticracked heel cream

## I. INTRODUCTION

The skin is a largest organ of the body with total area of about 20 square feet. Skin has three layers : the epidermis, the outer most layer of the skin provides a waterproof barrier and creates our skin tone. The cosmetics are the utility product used extensively throughout the world for maintaining an improving journal appearance of face another part of body ex: skin, eye, hair, hand, legs etc. herbal cosmetics are the preparations whichrepresentscosmeticsassociatedwithactivebioingredients,pharmaceuticalsand nutraceuticals cosmetics are the products that used to cleans and beautify the skin maintaining healthy skin is important for a healthy body. The skin underneath your feet is often dry, rough and chapped disorders-athletes foot, psoriasis, eczema, thyroid diseases, and some other conditions can be the causes of cracked heals. The dryness causes the skin to crack , lack of moisturization , over exposure to pollution an a few medical conditions like eczema, diabetes, thyroid and psoriasis cause dry and cracked feet. A number of beneficial effects of burn plants are reported, including wound and burn healing , anti-fungal and anti-inflammatory properties.

Creams are semisolid emulsion system with opaque appearance as contrasted with translucent ointments. Cream is used for external purpose. Creams are intended for application to the skin and mucosa membrane. Their consistence depends on the weather:

1. The emulsions is water in oil or oil in water.
2. Nature of solids in internal face.

Skincare creams can be classified on different basis.12

- According to function ex: cleansing, foundation, massage.
- According to characteristic properties ex: cold creams, vanishing creams etc.
- According to nature or type of emulsions
- Skin nourishment is important and required to preserve the normal of skin or as a treatment for a dry skin.

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 5 Sep - Oct 2024, pp: 08-12 www.ijprajournal.com ISSN: 2456-4494

## II. MATERIALS AND METHODS

**Requirements:**

Azadirachtaindica, Manjistha root powder, Liquorice root powder, sodium lauryl sulphate, methyl paraben, glycerin, span 80, beeswax was obtained from laboratories.

**Methods:**

**Extraction of Azadirachtaindica:**

Azadirachtaindica leaf extract was used the ease of availability and its medicinal properties. Fresh leaves were collected. They were surface cleaned with runningwater to rid of debris and others contaminated organic contents, followed bydoubleDW and air driedat Roomtemperature about 20gmsfinallycutleaves kept in a beaker containing 200ml double DW and boiled for 30min. The extract was cooled down and filtered with Whatsman filter paper no.1 and the extract was stored at40$^0$c for further Use(10).

**Extraction of Manjistha:** The drug is coarse powdered was used for the formulation water soluble extract dipped into the water which is 8times or 16 times of the samples wait taken and soaked over night to obtained water soluble extract through maceration process the manjistha (aqueous extract) is formed.

**Extraction of licorice:** The root was milled and passed through a sieve of 850mm mesh size. powdered plant material of differing weights (0.6-1g) was suspended in 10g of the appropriate solvent (10-90% glycerol in water, w/w) in a 50ml Erlenmeyer flask. The extraction was performed in an ultrasonic bath (Bandelin SONOREX$^R$ digital 10 P DK 156 BP, Berlin, Germany) at ultrasonication power of 360W and frequency of 35Hz during 20 min. the bath was temperature-controlled (20-70$^0$c). upon the extraction, the mixtures were filtered. All the extracts were stored at -20$^0$c, in the dark

**Table-1EVALUATION PARAMETERS FOR THE ANTI CRACKCREAM FORMULATION**

| Sl. No | Ingredients | Formulation(F1) | Formulation(F2) | Formulation(F3) |
|---|---|---|---|---|
| 1. | Rubiacordifolialinn(manjistha) | 2gm | 2gm | 2gm |
| 2. | Glycyrrhiza glabra (licorice) | 2gm | 1.50gm | 1.50gm |
| 3. | Azadirachtaindica | 1gm | 1gm | 1gm |
| 4. | Sodium lauryl sulphate | 1gm | 1gm | 1gm |
| 5. | Methyl paraben | 0.50gm | 0.50gm | 0.50gm |
| 6. | Glycerin | QS | QS | QS |
| 7. | Span 80 | QS | QS | QS |
| 8. | Bees wax | 2gm | 3gm | 4gm |

**Evaluation of crack cream :**

**Test for thermal stability:**

The formulated cream was inserting into glass bottle with the spatula and tapped to settles to rock bottom fill up to 2\3 capacity of the bottle and insert the plug and tightened the cap . Fitted was kept correct inside the incubator at 4$^0$C for 48hr. The sample passed the test, if on removal from the incubator shows no other phase separation(10).

**Test for microbial growth in formulated creams:**

The formulated crack creams inoculated on the petriplates of agar media by using the streak plate method and an impact was prepared by omitting the crack cream. The petriplates were placed into the incubator and are incubated at 37$^0$C for 24h. After the time period plates were taken out and check microbial growth by comparing it with the control(11).

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 5 Sep - Oct 2024, pp: 08-12 www.ijprajournal.com ISSN: 2456-4494

**Spreadability:**

The spreadability of samples was determined . Take 0.5g crack cream formulation was placed within a circle of 1 cm diameter on a glass slide over which a second glass plate was placed . A weight of 500g was allowedtoreston the upper glass slide for 5min. Spreadability refers to the area cover by a fixed amount of crack cream sample after the uniform spread of the sample on the glass slide. The increase in the diameter because of the spreading of the crack cream formulation was noted. Average of 3 determinations was noted(12)

**Irritancy:**

Test the mark a neighborhood(1sq.cm) on the left dorsal surface. The cream was applied to the required area and the time noted. Irritancy , erythema, edema, was checked if any for normal intervals upto 24h and reported (13).

**Washabilty:**

A small amount of cream applied available and washed under running water(14).

**Viscosity:**

Brookfield Synchro- Lectric Viscometer with helipath stand was used for viscosity studies. The sample(10g) was taken in a beaker and allowed to equilibrate for 5 min before measuring the reading using a T-D spindle at 10,20,30,40, 50,60,100rpm. Each speed the corresponding reading on the viscometer was noted. The spindle speed was successively lowered and the corresponding reading was noted. The measurements were carried in 3 times at ambient temperature. Direct multiplication of the readings with factors gives in the Brookfield viscometer catalogue gave the viscosity in cps. Average of three triplicates was computed(15)

**Evaluation parameters for the all crack cream formulations**

| Formulation code | pH (mean+_SD) | Viscosity at 10rpm (CPS) (mean +-SD) | Spreadability (mean +-SD) |
|---|---|---|---|
| F1 | 7.21+-0.185 | 1896+-4.56 | 4.72+-0.10 |
| F2 | 7.20+-0.189 | 2089+-5.89 | 6.15+-0.16 |
| F3 | 7.31+-0.244 | 2418+-6.75 | 6.95+-0.10 |

**$P^H$of the cream:**

The $p^H$ of the 10%w/v cream suspension was determined at $25^0$c using a pH meter, standardized using pH 4.0 and 7.0 standard buffers before use and average of triplicates were determined(16).

**Phase separation:**

The test conducted because of no any phase separation in the formulated cream. The formulated crack cream was kept intact during a closed container at 25-$100^0$c not expose to light. Phase separation was observed every 24h for 1mo. Daily changes in phase separation were checked.

**Moisture absorption studies:**

10mg of crack cream was taken on a watch glass. A 100ml beaker was taken with full of water and was kept in a desiccators without absorbents and allowed to get saturated. Watch glass with cream was introduced into the desiccators. It was left for 24h. After 24hrs the moisture absorption was noted that moisture was not absorption.

## III. RESULTS AND DISCUSSION

Prepared cream formulations was subjected to various assessment parameters and the findings obtained were within the limits. All the formulations were found to be alkaline in pH test. All the formulation showed pseudoplastic flow on the basis of viscosity. The spreadability of formulations F2 is greater as compared to other formulations as well as the prototype formulations. Amongst all of the formulations, only F1,F3,& F2 showed better thermal stability at 20oC, 30oC & 40oC. The F2 was selected as an optimize formulations on the basis of

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 5 Sep - Oct 2024, pp: 08-12 www.ijprajournal.com ISSN: 2456-4494

| Sl.No. | 1 | 2 | 3 |
|---|---|---|---|
| Formulation code | pH(mean+_SD) | Viscosity at 10rpm (CPS)(mean +-SD) | Spreadability (mean +-SD) |
| F1 | 7.21+-0.185 | 1896+-4.56 | 4.72+-0.10 |
| F2 | 7.20+-0.189 | 2089+-5.89 | 6.15+-0.16 |
| F3 | 7.31+-0.244 | 2418+-6.75 | 6.95+-0.10 |



## IV. CONCLUSION :

Herbal formulation share growing demand in the old market it is very good attempt to establish the herbal foot cream containing aqueous extract of neemleaves ,Rubiacordifolialinn , Glycyrrhizaglabra . The plant have been reported in literature having good anti-microbial ,anti-inflamatory, anti-oxidant. F1,F2 formulations are prepared by using varied concentration of extract prepared formulation (F1&F2) were evaluated parameters like colour, appearance, consistency, washability, pH and spreadability , and compared with marketed formulation. There wereno adverse effects either observed or not reported during the study. All the subjects completed the study and overall compliance to treatment was found to be good. Formulation F3 showed maximum activity . Foot cream acceptable in view of colour, odour, consistency, moisturizing , and healing properties and product gaves satisfactory results.

## REFERENCES:

[1]. DangeSV ,Sudhakar G. clinical efficacy of foot care cream in the management of foot cracks . Indian medical journal, 2009, 103(10)350-353.
[2]. Baker FG And Breach MR. Medical Microbiology Techniques. Butterworth London , 1980;43:422-424.
[3]. Sumitra M, Manikandam P and SugunaL.Efficacy of Buteamonosperma on dermal would healing in Rats. International journal Of Biochemistry and cell Biology, 2005;37;566-573.
[4]. Mehta R.M., Pharmaceutics – 6 th Edition, 2018, VallabhPrakasham, Delhi, 55-
[5]. 59
[6]. Suh EJ, Woo YA and Kim, HJ. Determination of water content in skin by using a FT near infrared spectrometer, Arch Pharm Res.,2005; 28(4): 458-462.
[7]. Boden I, Nilsson D, Naredi P and Lindholm-sethson, B. Characterization of healthy skin using near infrared spectroscopy and skin impedance, Med. Biol. Eng. Comput, 2008, 46: 985-995.
[8]. Manimaran, S, Nithya and Praveen TK. Development and screening of topical herbal cream formulation for anti microbial and wound healing activity. International journal of biological and pharmaceutical research, 2014; 5(5) : 383-388.
[9]. Nithya M, Suguna L and Rose C. The effect of nerve factor on the early responses during the process of wound healing, Biochimicaet Biophysics Acta, 2003; 1620- 25-31. 44

[10]. Sumitra M, Manikandan P and Suguna L, Efficacy of Buteamonosperma on dermal wound healing in rats. International journal of biochemistry and cell biology , 2005; 37: 566-573.
[11]. Hema Sharma Datta, Shankar Kumar Mitra and BhushanPatwardhan, 2009.Wound healing activity of topical application forms based on Ayurveda, eCAM Advance access published 2009, (2): 1-10.
[12]. VerneerBJ, Skin irritation and Sensitition J control release 1991;15:261-5
[13]. Sumitra M, ManikandanPandSuguna L efficacy butea on foot wound healing, 2005; 37: 566-573
[14]. AshwiniSD, SomishwarSk,Swetha SS. Formulations and evaluation of Vanishing herbal cream of crude drugs. Am J Ethnomed2014 ;1:313-8
[15]. NR Patel, Hu Momin, RL Dhumal, KL Mohite. Preparation and Evaluation of multi herbal cream. Adv J Pharma life sci Res 2017;5:27-32
[16]. Shakeel Ahmed, Shaifulla, Mudasir Ahmed, BabuLal Swami, SaiqaIkaram. By using of Azadirachtaindica leaves extract. J RadiatRes Appsci2016;9:1-7
[17]. ShivaniGhildiyal, Manish K Gautham, Vinod K Joshi , Raj K Goel, pharmacological evaluation of extract of Rubiacordifolialinn (Manjistha ), US national labarymedical. National Institute of health 2012; 31:117-2
[18]. Aditya TN, BashaSJ, Koshma MM, KhalanderSD, Rani YS Reddy VJ. A current review of Azadirachtaindica (neem) World J Pharm Pharmsci 2017;6:249-69
[19]. ChundranNk, Husen IR, RubiantiI. Effect of neem leaves extract (Azadirachtaindica) on wound healing. Althea Med J 2015;2:199-203