

Review on Wound Healing Cream of Jatropha Curcas Plant Latex

Inamdar Saniya N¹, Badhekar Akansha S², Shinde Pallavi M³, Datkhile Sachin V⁴

Students, Samarth Institute of Pharmacy, Belhe, Maharashtra., India^{1,2,3}

Department of Pharmaceutics, Samarth Institute of Pharmacy, Belhe, Maharashtra, India⁴

Department of Pharmacology, Samarth Institute of Pharmacy, Belhe, Maharashtra, India⁵

Abstract: *Jatrophacurcas* is widely employed in traditional folk medicine. Every a part of the plant has its own advantages in treating diseases. The latex of this plant has strong antimicrobial activity. Secondary metabolites (tannins, saponins and flavonoids) that are present within the latex make it such an honest antibacterial agent. An antibiotic cream is formulated using the dried latex of *Jatropha* because the active ingredient. The potential of antimicrobial activities within the *Jatropha* latex is proven. Thus, antibiotic cream will be wont to kill microorganisms and forestall infections. The cream is additionally shown good physical stability at temperature and normal weather conditions after one month. Since the *Jatropha* latex has medicinal properties, it's potentially to be commercialized in industry.

Keywords: *Jatropha*, Latex, Flavonoids, Saponins, *Jatrophacurcas*

I. INTRODUCTION

Jatrophacurcas could be a small tree or shrub belonging to family: Euphorbiaceae. It's many Synonym Curcaspurgans Medic. *J. curcas* Linn. from the Euphorbiaceae family has been employed in many parts of the globe for various medicinal purposes [1]. The different types plant name are present like parsaerand, mogliErandaratanjot. The leaf and latex extracts of *J. curcas* contained appreciable amounts of secondary metabolic compounds [2,3]. Wound is defined as a loss or breaking of cellular and anatomic or functional continuity of living tissues. Healing of wound may be a process that's initiated by trauma and infrequently terminated by scar formation. The method of wound healing occurs in numerous phases like coagulation, epithelialization, granulation, collagenation and tissue remodeling. Extracts from this plant are reported to own remarkable anti-inflammatory and antibacterial [4], cosmetic [5] and wound healing [6,7] hemostatic [8], antioxidant, and anticancer [9] potential. The method of wound healing has two components, first is formation of latest tissue and other is protections from microbial invasion during the healing process. On the premise of the physiology of wound healing, the injuries may be classified as chronic and acute wounds. [10] Furthermore, variety of antibiotic compounds are utilized in the treatment of the bacterial infected wounds. Unfortunately, there's a heavy untoward effect like carcinogenesis is generated by a number of these growth factors [11,12]. The bioactive compounds are alkaloids, saponins, flavonoids, and tannins [13]. Flavonoids, saponins, and tannins play a job within the process of wound healing that affects the method of epithelialization [14]. Flavonoids and saponins can accelerate migration and proliferation of fibroblast cells into the wound area and increase collagen synthesis in order that it can accelerate the method of repair of epithelial surfaces [15,16]. Tannin has antibacterial and angiogenic activities so it promote restoration [17].



Advantages:

- Antibacterial activity against *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa*.
- The latex of *Jatropha* contains an alkaloid known as “*Jatrophine*” which is believed to have anti-cancer properties.
- It is used as an antiseptic against cuts and wounds due to the healing effect.
- Although the latex has been used traditionally as a plant medicament, scientific investigation including toxicological studies was very limited.

Disadvantages

- Ingestion can cause digestive irritation, including diarrhea and nausea

II. MATERIAL AND METHODS

2.1 Collection of Latex

The latex was collected in the morning with a bark of stems , latex at capacity into a sterile bottle. *J.curcus* latex cream made with a base of oil in water (O/W) according to methods Muntiahetaal. [18]

2.2 Formulation Table

Ingredients	Quantity taken	Role
Wool fat	1gm	Emollient
Hard paraffin	1gm	Lubricant
White soft paraffin	13gm	Ointment base
<i>Jatropha</i> plant latex	5ml	Active ingredients
Triethanolamine	0.5ml	pH maintain hair & skin
Methyl paraben	0.02gm	Prevent fungal growth
Water	Q.S	Vehicle

2.3 Formulation

1. Accurately weight the all ingredients .prepared the two phase first is oil phase and second in water phase
2. In Oil phase take steric acid , wool fat ,hard paraffin ,white soft paraffin , add all ingredients in beaker and melt it.
3. In water phase take methyl paraben ,triethanolamine ,water add all ingredients in beaker and also melt it .
4. Then add water phase in oil phase and also add *jatropha* plant latex with continuous string until coling of emulsifier in china dish.
5. Prepared the cream and store in container and performed evaluation test.

III .EVALUATION OF WOUND HEALING CREAM

- **Physical Properties:** The Cream was observed for color and odor cream in white color observed
- **Appearance:** The appearance of the cream was judged by its color, pearlscencean Roughness and graded.
- **After feel:** Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was checked.
- **Type of smear:** After application of cream, the type of film or smear formed on the skin Were checked.
- **Ease of Removal:** The ease of removal of the cream applied was examined by washing the applied part with tap water.
- **Irritancy test:** Mark an area (1sq.cm) on the left hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hrs and reported.

- **Determination of pH:** The pH meter was calibrated using standard buffer solution. About 0.5 g of the cream was weighed and dissolved in 50.0 ml of distilled water and its pH was measured.
- **Test for microbial growth in formulated creams:** The formulated creams were inoculated on the plates of agar media by streak plate method and a control was prepared by omitting the cream. The plates were placed in to the incubator and are incubated at 37°C for 24 hours. After the incubation period, plates were taken out and check the microbial growth by comparing it with the control.
- **Determination of Type of Emulsion Dilution Test:** In this test the emulsion is diluted either with oil or water. If the emulsion is o/w type and it is diluted with water, it will remain stable as water is the dispersion medium" but if it is diluted with oil, the emulsion will break as oil and water are not miscible with each other. Oil in water emulsion can easily be diluted with an aqueous solvent, whereas water in oil emulsion can be diluted with an oily liquid.

IV. CONCLUSION

The wound healing cream on performed all test and we found the 10% Jatropha latex in cream can be used as a topical treatment, which had antibacterial activity, anti-inflammatory, the bioactive compound or phytochemical substances contained in Jatropha cream responsible for antibacterial, anti-inflammatory and collagen tissue synthesis.

ACKNOWLEDGEMENT

We thanks and gratitude to Trustee of Samarth Rural Educational Institute's and team of Samarth Institute of Pharmacy, Belhe, Pune with their valuable guidance and support.

REFERENCES

- [1]. Abdelgadir, H.A. and Staden, J.V. (2013) Ethnobotany, ethnopharmacology and toxicity of Jatrophacurcas L. (Euphorbiaceae): A review. *South Afr. J. Bot.*, 88: 204-218
- [2]. Igbinosa, O.O., Igbinosa, E. and Aiyeoro, O.A. (2009) Antimicrobial activity and phytochemical screening of stem bark extracts from Jatrophacurcas (Linn). *Afr. J. Pharm. Pharmacol.*, 3(2): 58-62.
- [3]. Soares, A.M.S., Carvalho, L.P., Melo, E.J.T., Costa, H.P.S., Vasconcelos, I.M. and Oliveira, J.T.A. (2015) A protein extract and a cysteine protease inhibitor enriched fraction from Jatrophacurcas seed cake have in vitro anti-Toxoplasma gondii activity. *Exp. Parasitol.*, 153: 111-117
- [4]. Sangeetha, J., Divya, K., Prashanth, M.V., Vamshikrishna,A. and Rani, G.L. (2009) Anti-inflammatory and antibacterial activity of Jatrophacurcas Linn. *J. Pharm. Res. Health Care*, 2: 258-262.
- [5]. Warra, A.A. (2012) Cosmetic potentials of physic nut (Jatrophacurcas Linn.) seed oil: A review. *Am. J. Sci. Ind. Res.*, 3(6): 358-366.
- [6]. Shetty, S., Udupa, S.L., Udupa, A.L. and Venkata, V.R. (2006) Wound healing activities of bark extract of Jatrophacurcas Linn in albino rats. *Saudi Med. J.*, 27(10): 1473-1476.
- [7]. Esimone, C.O., Nworu, C.S. and Jackson, C.L. (2008) Cutaneous wound healing activity of a herbal ointment containing the leaf extract of Jatrophacurcas L. (Euphorbiaceae). *Int. J. Appl. Res. Nat. Prod.*, 1: 1-4.
- [8]. Wongkrajang, P., Nurlely, P.S., Temsiririrkkul, R., Thongpraditchote, S., Ruangwises, N., Mitrevej, A., Khammanit, R. and Hanyongyuth, R. (2015) Hemostatic effect of n-hexane extracts of Jatrophacurcas Linn leaf. *Mahidol Univ. J. Pharm. Sci.*, 42(3): 110-117.
- [9]. Oskouiean, E., Abdullah, N., Saad, W.Z., Omar, A.R., Ahmad, S., Kuan, W.B., Zolkifli, N.A., Hendra, R. and Ho, Y.W. (2011) Antioxidant, anti-inflammatory and anti-cancer activities of methanolic extracts from Jatrophacurcas Linn. *J. Med. Plants Res.*, 5(1): 49-57.
- [10]. Darmawi D, DarniatiManaf Z.H, SyafruddinSayuti A. Isolation of gram-negative bacteria from metacarpal injury ofPantheratigrissumatrae trapped in Subulussalam, Proc. Ann. Int. Con. (AIC) Syiah Kuala Univ. 2011;1:131-135.
- [11]. Raica M, Cimpean A.M. Platelet-derived growth factor (PDGF)/PDGF receptors (PDGFR) axis as target for antitumor and-antiangiogenic therapy. *Pharmaceutical*. 2010;3:572-599.

- [12]. Yu J, Ustach C, Kim H.R.C. Platelet-derived growth factor signaling and human cancer. *J. Biochem. Mol. Biol.* 2003;36(1):49–59.
- [13]. Priyandari Y, Umatjina SATM: Effect of jarak tree topical increase wound healing excision period of mice. *Journal of Ners Community.* 2015; 6 (2): 198-206.
- [14]. Pratiwi AD, Ratnawati R, Kristianto H: Effect of clove flower bud extract (*Syzygiumaromaticum*) on increasing the thickness of epithelialization of incision wounds in white rats (*Rattusnorvergicus*) Wistar strain. *FKUB Health Magazine.* 2015; 2 (3): 135-143.
- [15]. Takahashi M, Ogihara H, Nomingerel T, et al.: Repair of the surface epithelium after saponin-induced colonic mucosal injury in the rat. *Medical Electron Microscopy.* 1998; 31: 1–9.
- [16]. Ricardo M, Uribe G, Saldivar S: Anti-inflammatory glycosylated flavonoids as therapeutic agents for the treatment of diabetes-impaired wounds. *Curr Top Med Chem.* 2015; 15 (23): 2456-2463.
- [17]. Li K, Diao Y, Zhang H, et al.:Tannin extracts from immature fruits of *TerminaliachebulaFructus Retz.* promote cutaneous wound healing in rats. *BMC COMPLEM ALTERN M.* 2011; 11 (86): 1-9.
- [18]. Muntiaha M.C, Yamlean P.V.Y, Lolo W.A. Test effectivity *Jatrophamultifidal*, to heal wound infection cause by *Staphylococcus aureus* in rabbit (*Orytolaguscuniculus*) *Pharmacon.* 2014;3(3):294-302.