



IODINE LEAF GUM GEL (*JATROPHA MULTIFIDA* LINN) TO ACCELERATE THE HEALING PROCESS OF GRADE II BURN WOUNDS IN MICE (*MUS MUSCULUS* LINN)

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ABSTRACT

Burns are a serious emergency that necessitates immediate intervention to save lives. Iodine leaf sap (*Jatropha multifida* Linn) contains saponins, tannins, alkaloids and flavonoids which are successful in speeding up the recuperating of consume wounds. Research Objective: Determine the effect of iodine leaf plastic gel on the improvement of level II consumption in male mice (*Mus musculus* Linn). Objective: The examination plans to decide the impact of iodine leaf plastic gel on mending grade II consumes in male mice (*Mus musculus* Linn). Method: The exploration utilized the genuine trial research facility strategy through a post test just control configuration bunch plan in the lab at Kusuma Husada College, Surakarta. Involving 24 mice as guinea pigs, they were partitioned into 3 gatherings, to be specific positive control, negative control and iodine leaf sap gel. 1.5 centimeters of hot metal were attached to the mice's backs for five to ten seconds to produce burn wounds. The area of the burn wound, the percentage of healing, and the time it took for the burn wound to heal were the parameters that were observed. Results: Information investigation utilized the One-Way ANOVA test. The consequences of the review showed that iodine leaf plastic gel made some mending memories of 8 days and a level of 30.75% better recuperating of consume wounds contrasted with the other benchmark groups. The factual experimental outcomes expressed that it was huge (<0.05) in the level of consume wound mending. Conclusions: The study's conclusion was that compared to the other control groups, iodine leaf latex gel at a concentration of 6% improved burn healing.

Keywords: burn injury; iodine; mice

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INTRODUCTION

Burns are an emergency problem that can occur anywhere and at any time. Burns are often serious situations that require immediate life-saving action. Burns are damage and loss of body tissue that occurs due to heat such as fire, hot liquids, chemicals, electricity and radiation (Anggowarsito, 2014). Topical ointment is one of the therapies that can be given in cases of burns. According to (Syaiful et al., 2023) The topical agent Zinc Cream Epithelium can speed up the autolysis process so that necrotic tissue will become softer. Burns are a type of trauma that damages or changes the body's systems due to friction between the surface of the skin and a hot object, either directly or indirectly. The length of tissue contact with the heat source influences the extent and depth, damage to body tissue determines the length of the healing mechanism. The longer the contact time, the wider and deeper the tissue damage that occurs (Alepandi et al., 2022). The causes of premature death due to burns depend on 3

factors, namely age, percentage of body surface area burned and inhalation injury (Nygaard & Endorf, 2020).

Media reports on the prevalence of burns. center of burn WHO (2017) assessed at 180,000 every year. Mostly in nations with low or middle incomes (Febrianto et al., 2016). In Indonesia, as per Riskesdas 2018, it is still generally high at around 40%. The most elevated pervasiveness is in the Papua region at 2.1% and the least is in the North Sulawesi region at 0.5%, (Alepani et al., 2022). The predominance of consumes in Focal Java as per Riskesdas 2018 is 1% with a grouping of ages 1-4 years adding up to 1.4%, ages 5-14 years adding up to 0.45%, ages 15-24 years adding up to 1.53%, ages 45-54 years of age added up to 0.65%, matured 55-64 years added up to 1.95%, matured 65-74 years added up to 1.17%, matured >75 years added up to 1.04% (Fajriyani, 2022) occurs in 0.6% and 0.8% of men and women, (Nurhayati, 2021).

So it requires the job of prepared and gifted wellbeing laborers in the consume wound mending process. (Rahman et al., 2022) At present, treatment utilizing normal plants is generally utilized by the local area. Numerous studies indicate that numerous nutritious plants can be utilized as a treatment. Drugs from normal fixings actually should be investigated and created utilizing further developed innovation to help the presence and job of restorative plants as need might arise. (Farid et al., 2020). One of the plants utilized for treatment is the iodine tree (*Jatropha multifida* Linn). This plant has many names on the island of Java like chinese distance, tintir distance (Hermawan et al., 2016) One of the plants utilized for treatment is the iodine tree (*Jatropha multifida* Linn). This plant has many names on the island of Java like chinese distance, tintir distance (Santoso, 2021).

The iodine plant is utilized as a restorative plant by individuals in tropical and subtropical nations, since this plant has many purposes from seed oil, sap, leaves, bark and roots to fix illnesses, one of which is connected with the skin. (Sabandar et al., 2013) The sap of the iodine plant is utilized to treat wounds by applying the sap of the stems or passes on to the injury, which has been demonstrated to accelerate wound recuperating in light of the fact that it contains substance mixtures like saponins, flavonoids, tannins and alkaloids. This compound has gainful properties when utilized for wound treatment (Yarsis Septiardi N, Rif Atiningtyas Haris, 2020) In view of past examination, the readiness of additional iodine leaf gel utilizing a convergence of 3% is successful in recuperating grade II consumes, and can accelerate the mending system of consumes. (Thahir & Nurfitriah, 2018). Administration of the 3% preparation on days 7 and 14 showed a decrease in inflammatory cells, macroscopically it was able to show an increase in angiogenesis, fibroblast and re-epithelialization scores. On the 21st day administration of the 3% gel preparation was able to close wounds in mice and There are already feathers covering the wound area (Febiati, 2016)

In light of the information above, specialists are keen on fostering the utilization of iodine plant leaf sap (*Jatropha multifida* Linn) into a gel dose structure that is mediated in research center guinea pigs of mice (*Mus musculus* Linn) to see if there is an impact of iodine leaf sap gel (*Jatropha multifida* Linn) on the cycle. recuperating of grade II consumes in mice (*Mus musculus* Linn) guinea pigs.

METHOD

This examination is Valid Trial Labs research with a quantitative methodology utilizing the Post Test Just Benchmark Group plan/technique. Where respondents were partitioned into 3 mediation gatherings, in particular gathering one intercession with iodine leaf sap gel

treatment, bunch two positive control utilizing 0.9% NaCl and bunch three negative control without treatment, where the benchmark group was utilized as a correlation with recognize the impact of iodine leaf sap gel (*Jatropha multifida* Linn) on the recuperating system of grade II consumes in mice (*Mus musculus* Linn) guinea pigs. This examination has finished the moral freedom assessment at RSUD Dr. Moewardi with number 818/V/HREC/2023 The examination was completed at the coordinated lab at Kusuma Husada College, Surakarta in May - July 2023. In this review, mice were utilized as guinea pigs with a populace of 27 guinea pigs. The example was resolved utilizing the Federer copy recipe with the goal that an example of 24 guinea pigs was gotten. With the standards of being sound, not twisted, male, weighing 18-22 grams and 6 two months old. Material testing was done toward the beginning of the day at 05.00-08.30 WIB, in Karanganyar town, Tamansari Locale, Boyolali Rule. Research not set in stone in the Herbarium Building, Tawangmunggu Place for Restorative Plant Innovative work (B2P2TO) expressed in view of letter number KM.04.02/XI.6/1437/2023 which shows that the examples utilized were for sure iodine plants (*Jatropha multifida* Linn).

The devices utilized for this exploration were scratch pad, pencils, markers, calipers, scales/balances, mortars and stampers, estimating cups, tubes, estimating chambers, attractive stirrers, substance spatulas, synthetic spoons, dropper pipettes, hair trimmers, scissors, blades, matches, metal plates, transports, handscoons, cotton buds, mouse drums alongside spots to eat and drink. Material: Iodine leaf sap (6%), Carbopol (2%), Propyl parabean (0.2%), Methyl parabean (0.18%), Glycerin (8%), Triethanolamine (TEA) (0.5%), Aqua distilata (83.12%), and NaCl (0.9%) were the materials used in this study. In this review, it was decided to utilize the iodine leaf sap equation with a grouping of 6%, this depended on research (Thahir & Nurfitriah, 2018) and (Febiati, 2016) showed that a convergence of 3% showed ideal consume wound recuperating results, so this study was done with a portion twice bigger. The mice were accustomed for 3 days, then, at that point, partitioned into 3 little gatherings. Prior to being harmed, mice were given sedation utilizing Liposin on the back where the fur had been cut clean. The 1.5 cm-diameter metal used to create the wound has been heated by fire for 5-10 seconds under pressure to produce a burn. Each gathering of mice guinea pigs was given treatment as per the method for each gathering consistently in the first part of the day from 08.00 to 09.00 WIB alongside mediation to work out the injury region and level of wound mending.

RESULTS

In this review, the point was to decide the impact of yoiium (*Jatropha multifida* Linn) leaf plastic gel on the recuperating of grade II consumes in mice (*Mus musculus* Linn) at a centralization of 6% with the noticed boundaries being the region of the consume wound, the length of mending time and the level of wound mending. grade II consume.

Assessment of Research center Trial of Gel Structure Arrangements Organoleptic and Homogeneity Tests

The outcomes showed that the dose structure was semi-strong, brown in variety with an unmistakable fragrance of iodine leaf sap with a delicate surface. All arrangements showed no coarse grains when seen outwardly. This indicates that the preparation is uniformly distributed and arranged.

Libertine Test

The libertine test is a joy test did on 20 worker respondents by finishing up a survey. In view of the epicurean test, it was found that the iodine leaf plastic gel, regarding variety, fragrance,

surface and by and large, was loved by respondents.

Timeframe and Degree of Mending of Consumes

The mending area of consume wounds diminished most quickly beginning the principal day with wounds estimating 1.5 cm. On the eighth day they showed mending with an area of 0 cm, the absolute guinea pigs in the mediation bunch had not shown recuperating, with an area of 1.1 cm, 0.9 cm and 0.8 cm until on the tenth day they had totally recuperated and arrived at 0 cm and 0.8 cm of mending. in the positive benchmark group on the tenth day there were 3 guinea pigs that had not yet arrived at recuperating, still with twisted areas of 0.5cm, 1cm and 0.7cm, while in the negative benchmark group there were 3 guinea pigs that had not yet arrived at mending, still with twisted areas of 0.8cm. and 0.9cm. The end was gotten that in this treatment the iodine leaf sap gel was the quickest in recuperating grade II consume

Consume Wound Mending Rate

The level of consume mending noticed was an estimation of the region of the underlying injury until the injury evaporated on the tenth day, where a high outcome showed powerful consume recuperating with the consume scar contracting from one day to another. The consequences of estimating the level of recuperating of consume wounds showed that the iodine leaf plastic gel mediation bunch on day 8 had accomplished 100 percent mending and the 3 mice guinea pigs were currently at a level of 26.67%, 46.67% and 40.00%. In the mean time, in the positive and negative benchmark groups, just 1 guinea pig had accomplished 100 percent recuperation on the eighth day.

On the tenth day all guinea pigs had accomplished a recuperation level of 100 percent. In the 0.9% NaCl bunch, there were as yet 3 guinea pigs with wound recuperating rates of 66.67%, 33.33% and 53.33% and in the gathering without treatment there were additionally 3 guinea pigs that had not yet arrived at the mending rate which was currently at 46.67 and 40.00%. Where the iodine leaf sap gel got the most noteworthy typical level of recuperation, specifically 30.85% contrasted with the benchmark group of other guinea pigs, in particular the positive benchmark group 20.91% and the negative benchmark group 11.48%.

Uji Statistical Program For Social Science (SPSS) One-Way Anova

In light of the SPSS test results showing that the information was disseminated ordinarily and homogeneously (Sig. >0.05), the test was kept utilizing One-Way Anova to decide the distinctions between medicines, the outcomes showed that there were huge contrasts, to be specific (Sig. <0.05), In this way, to affirm these distinctions, a Post Hoc Turkey test was completed which showed that the information results were isolated into 2 subsets of information gatherings, specifically bunch 1 comprising of the gathering without treatment and 0.9% NaCl and bunch 2 comprising of 0.9% NaCl and leaf sap gel. iodine. In light of the experimental outcomes, it very well may be seen that iodine leaf plastic gel is demonstrated to have the best enemy of consume impact contrasted with different medicines.

DISCUSSION

pH Test

The pH test is connected with the wellbeing and solace of the arrangement when utilized, so the pH of the gel readiness should be equivalent to the pH of human skin, to be specific 4.5 to 6.5(Tranggono et al., 2007). Assuming that the pH is acidic it will make the skin become bothered, assuming that the pH is exceptionally soluble it will make the skin become layered and bothersome. (Pratimasari et al., 2015). In light of the aftereffects of testing the pH of the iodine leaf plastic gel planning, the pH was 5, which is named typical for human skin.

Visikositas Test

The purpose of the viscosity test is to ascertain a substance's concentration value. A good viscosity value is 500-10.00 Cpas, and the viscosity level is proportional to the viscosity number. (Rahmatullah et al., 2020). Pada uji visikositas sediaan gel getah daun yodium diperoleh hasil 3.400 Cpas.

The spreadability test

Is used to determine how quickly the gel preparation spreads when applied to the skin because it affects the drug's absorption and the speed at which the active substance is released (Garg et al., 2002). In this test the experimental outcomes got without a heap were 3 cm, utilizing a heap of 50 grams and 100 grams the outcomes were 4 cm. This expresses that the spreadability trial of the gel arrangement doesn't meet the necessities since it is impacted by the degree of consistency of the planning. Uji daya lekat The dosage adhesion test is used to determine a formulation's ability to adhere to the skin. The longer the formulation adheres, the better it is, allowing the preparation's active ingredient to have a wider effect. (Rahmatullah et al., 2020) The bond test prerequisite for gel structure arrangements isn't under 4 seconds (Pratimasari et al., 2015). The test results showed that the adhesion of the iodine leaf gum gel met the adhesion test requirements.

The mechanism of healing burns using the activity of administering a gel form of iodine leaf sap with a concentration of 6% occurs because the active compounds contained in the iodine plant which play a role in the wound healing mechanism are saponins, tannins, alkaloids and flavonoids, which have antibacterial and antimicrobial activity. , antifungal, antiviral, anticoagulant, anti-inflammatory and antioxidant (Sabandar et al., 2013). Saponin assuages torment and framing new cells. (Yarsis Septiardi N, Rif Atiningtyas Haris, 2020) where the collagen that makes up the strands recharges tissue and speeds up the expansion stage (Hardiani, 2019) Tannin assumes a part in catching free extremists that cause harm and makes a mitigating difference, lessening irritation as well as fixing and smothering torment (enlarging, heat, myeri) and furthermore as an astringent which can accelerate the following stage in fixing wounds without harming living cells (Hardiani, 2019).

Alkaloids are antibacterial by inciting the components that structure bacterial cells, forestalling cell walls (microorganisms connected to the injury being separated straight by the alkaloids) so the layers that make up the cell walls are not framed which causes bacterial cell demise. (Hardiani, 2019). Flavonoids capability to further develop blood course all through the body and forestall blockages of veins, have mitigating properties and are valuable as cancer prevention agents and assist with lessening torment in the event that draining happens. Aside from that, it is helpful as a mitigating and forestalls firmness and torment brought about by consumes (Handayani et al., 2016).

CONCLUSION

The area of consumes treated utilizing iodine leaf plastic gel diminished the quickest contrasted with the other benchmark groups. The recuperating time for consumes utilizing iodine leaf sap gel begins from the eighth day and everything mends on the tenth day. With a healing percentage of 30.75%, iodine leaf latex gel influences the healing process of grade II burns on the skin of the mice tested.

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