

## USE OF *CALENDULA OFFICINALIS* WITH *CURCUMA LONGA* IN GLYCERINE BASE FOR MANAGEMENT OF LARGE WOUND IN EQUINES – A CLINICAL STUDY

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### ABSTRACT

The present study was conducted on 6 horses having large open wounds with no possibility of suturing due to various aetiologies of trauma or injuries. Horses were treated with topical application of 10% *Calendula officinalis* with 10% *Curcuma longa* in glycerine base twice a day till complete healing. It is concluded that *Calendula officinalis* with *Curcuma longa* in glycerine base can be successfully used for the treatment of large open wound in equines without any complication, especially proud flesh.

**Keywords:** *Calendula officinalis*, *Curcuma longa*, Equines, Wound healing

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An ideal wound-healing agent should be one that facilitates granulation and collagen formation; debrides necrotic tissue and prevents wound slough; promotes normal immunity; minimises microbial colonisation; alleviates pain, facilitates angiogenesis and tissue perfusion (Gilchrist, 1994). From veterinary perspective, an ideal wound healing agent should also be cost-effective, produce minimal patient discomfort and easy to apply. *Calendula officinalis* in glycerine paste possesses a number of properties that make this herbal agent ideal for acute and chronic wound management in animals (Kumar *et al.*, 2019). As per veterinary perspective, *Calendula officinalis* with *Curcuma longa* in glycerine base is economical, easily available and easy to apply and can be prepared at home or field level that increases more use of these herbal agents for acute and chronic wound management in ruminants (Kumar *et al.*, 2020). Despite the potential application of calendula and turmeric powder in conventional wound management, there has been no systematic study to evaluate the clinical effectiveness for wound management in equines.

The present study was conducted on six horses irrespective of breed, age and sex reported to Department of Veterinary Surgery and Radiology, LUVAS, Hisar with history of large size chronic and fresh wound having no possibility of suturing. The size of wound was measured with the help of aseptic thread placed directly over wound site followed by measuring it over the scale. All the animals were treated by topical application of 10% *Calendula officinalis* (Ashoka Homoeopathic Laboratory, Hisar) with 10% *Curcuma longa* (commercially available) in glycerine base twice a day. Necrotic and heavily infected

wounds were first debrided and antiseptic dressing done with diluted povidone iodine in normal saline (1:10) for 1 to 2 days. Owners were advised for daily antiseptic dressing of wound with paste and avoid licking of the wound. Post-operative telephonic follow-up with photographs were taken from the owner till complete wound healing.

In the present study, most of the wounds presented were infected, large in size having no possibility of suturing (Table 1.). No infection was reported in these cases after commencing the treatment due to antibacterial property of this medicinal paste. *Calendula* flowers have a high degree of activity against 18 different strains of anaerobic and facultative aerobic periodontal bacteria *in vitro* (Iauk *et al.*, 2003), and against 4 different types of fungi, with the inhibitory effect being comparable to that exerted by the antifungal agents Amphotericin B and Nystatin (Kasiram *et al.*, 2000). *Curcuma longa* rhizome has been traditionally used as antimicrobial agent (Rudrappa and Bais, 2008). Glycerine is mild antimicrobial and antiviral and is an FDA approved agent for wound care. Clinical studies have shown that glycerine in a high concentration creates a bacteriostatic and moist environment which decreases the number of microbes in the wound and act as good base for herbal plant extracts.

Pink coloured granulation tissue was observed at wound area with good vascularisation during the early phase of wound healing (Fig. 1B) and at later stage, beef red colour wound seen with severe contraction of epithelium at wound site (Fig. 1D). Wound area size got decreased significantly (Fig. 2B) in initial days of treatment which might be due to more collagen formation at the wound site. These findings correlate with the

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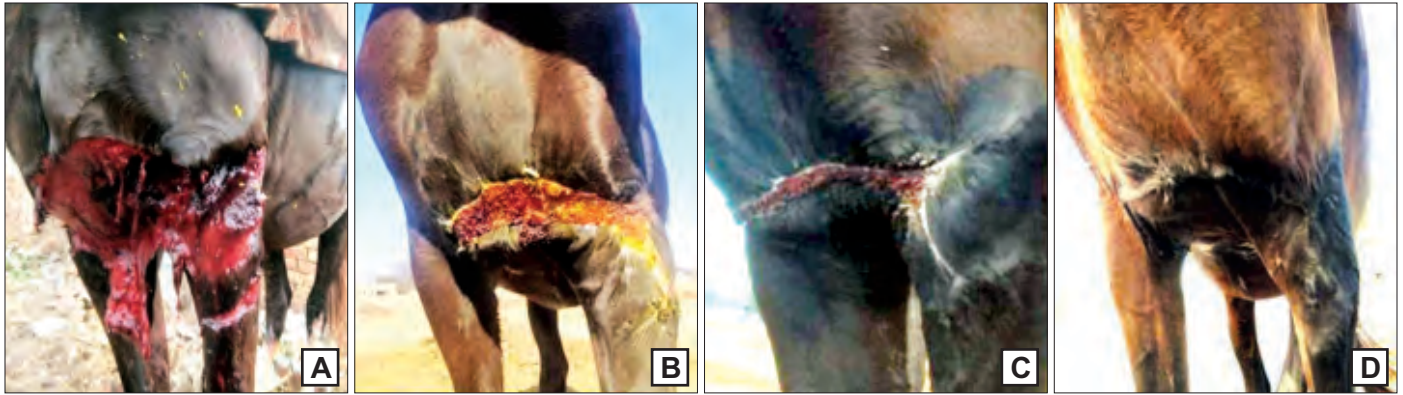


Fig. 1. (A) Large open lacerated wound on brisket at day 0. (B) wound size contraction, vascularisation at day 35 (C) Significant reduction of wound surface area with epithelialization 50 days post treatment (D) Complete wound healing with minimum scar formation after 75 days of treatment

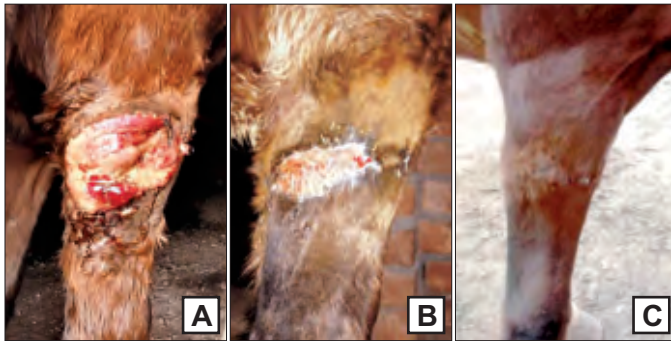


Fig. 2. (A) Old edematous ulcerated wound on left fore limb since 15 days; (B) Marked contraction and epithelialization of affected site at 20 days post treatment; (C) Complete wound healing with minimum scar at 40 days post treatment.

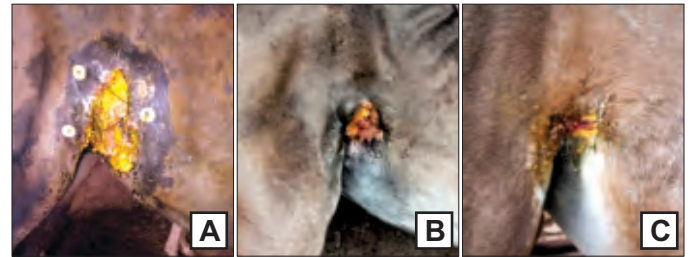


Fig. 3. (A) Old healing granulated wound on right flank region cranial to stifle joint from one month at day 0; (B) Marked contraction and epithelialization of affected site at 14 days post treatment; (C) minimum scar at 25 days post treatment.

Table 1

**Detailed gross observations, size of wound, any previous treatment given and time to heal and remarks in equines.**

Sr. No.	Age	Sex	Gross observations	Approximate size of wound in cm (length × breadth × depth)	Any previous treatment given	Healing time	Remarks
1	4 years	Male	Fresh deep lacerated wound from fencing wire on Right forelimb and left hock and fetlock joint	15×8×6 18×9×5 10×4×3	Nil	50 days	Healing took place with slight lameness in left hind limb may be because of extensor muscles damage.
2	6 years (Fig. 1)	Male	Fresh deep lacerated wound from fencing wire on brisket region. Stay sutures were applied on the wound area.	40×15×10	Nil	75 days	Wound healed with minimum scar formation
3	3 years (Fig. 2)	Male	Old oedematous chronic wound on left fore limb from 15 days	12×9×1	Dressing with povidone-iodine	40 days	Wound healed rapidly with minimum scar formation
4	1.5 years (Fig. 3)	Female	Old healing granulating wound on right inguinal region from one month	20×12×5	Dressing with povidone-iodine	30 days	Healing took place rapidly with minimum scar formation
5	3 years	Male	Old ulcerative infected wound proximal to right hock joint	10×6×2	Dressing with povidone-iodine	55 days	Wound healed with minimum scar formation but took more times than others cases.
6	6 years	Male	Old healing wound posterior to right hock joint from 10 days	7×4×4	Dressing with povidone-iodine	30 days	Wound healed with minimum scar formation

findings of Kumar *et al.* (2019 and 2020). Peripheral swelling got reduced in initial 2 to 3 days after applying the topical preparations and no swelling was seen during entire period of wound healing. Minimum scar formation was observed in most of cases. Proud flesh is a major complication during healing of large open wounds in equines but no such complication was observed (Fig. 2 and 3C). In the present study, these findings correlate with Kumar *et al.* (2019). Curcumin, a component of turmeric powder possesses anti-inflammatory, anti-proliferative and antioxidant properties (Thangapazham *et al.*, 2013). *Calendula officinalis* with *Curcuma longa* in glycerine base has anti-bacterial, anti-inflammatory and antioxidant properties and heal the wound with minimum scar formation in large ruminants (Kumar *et al.*, 2020).

It is concluded that *Calendula officinalis* with *Curcuma longa* in glycerine base can be successfully used for the treatment of large open wound in equines without any complication especially proud flesh.

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