



Tobacco leaf infusion (*Nicotiana tabacum*) for cutaneous myiasis in a dog

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ABSTRACT: This case report describes the clinical outcome of a dog with cutaneous myiasis treated with topical tobacco leaf infusion (*Nicotiana tabacum*). An 8-year-old male local dog from Tabanan, Bali, was presented with a foul-smelling open wound at the base of the tail. Physical examination revealed fly larvae within the wound, and cutaneous myiasis was diagnosed. A 2.5% w/v tobacco leaf infusion was prepared by heating 5 g of dried tobacco leaf simplicia in 200 mL of water at 90°C for 30 min, followed by cooling and filtration. The infusion was applied topically at 3–4 drops into the wound twice daily for 10 days. Manual larval extraction and wound suturing were not performed. Larvae emerged from the wound after topical application. Clinical improvement was observed during follow-up, with scab formation on day 7 and complete wound closure by day 14. No adverse clinical signs were reported during the observation period.

Keywords:

canine myiasis, cutaneous wound, *Nicotiana tabacum*, tobacco leaf infusion, topical therapy

■ INTRODUCTION

Myiasis is the infestation of living tissues of vertebrates by Diptera larvae (maggots). In dogs, myiasis manifests as cutaneous myiasis, involving larvae on the skin, including furunculosis, migration, and myiasis in open wounds (Solomon *et al.* 2016). Kitui County, Kenya, reported 45% canine cutaneous myiasis, with *Cordylobia anthropophaga* identified, and poor housing and environmental hygiene were identified as risk factors (Mutinda *et al.* 2022). In Indonesia, myiasis can be caused by several flies, including the Old-World Screwworm (OWS), *Chrysomya bezziana* (Diptera: Calliphoridae), and *Musca* spp. (Wardhana *et al.* 2018). Myiasis in dogs is treated by extraction, surgery, or larvicidal drugs, such as ivermectin and isoxazolines (Salant *et al.* 2020). However, in rural areas with limited access, treatment is difficult; therefore, traditional treatments are used in the community (Wardhana *et al.* 2018).

Herbal therapy is used to treat myiasis. One treatment is tobacco (*Nicotiana tabacum*) (Wardhana *et al.* 2018). Tobacco has insecticidal properties (Kristinawati *et al.* 2019). Its nicotine content acts as a contact poison for insects (Ashirbekov 2020). In rural Indonesia, farmers commonly use tobacco to treat myiasis in livestock (Wardhana *et al.* 2018). Although tobacco preparations are traditionally used in livestock and rural communities, clinical documentation in dogs remains limited. This case report describes myiasis treatment and healing in dogs using tobacco infusion.

■ CASE

Anamnesis and Signalment: An 8-year-old male local dog was kept loose around the owner's house in Tabanan, Bali. The owner reported an open wound at the base of the tail with an unpleasant odor. **Physical examination:** Body weight 15 kg with an open wound at the base of the tail, and fly larvae were observed (Figure 1a). **Diagnosis:** Myiasis. **Differential diagnosis:** Abscess. **Treatment:** Treatment used traditional medicine as tobacco-leaf extract (*Nicotiana tabacum*). Extraction used a simple heating method to obtain tobacco leaf infusion. A total of 5 g of dried tobacco leaf simplicia was boiled at 90°C in 200 ml of water for 30 min, producing

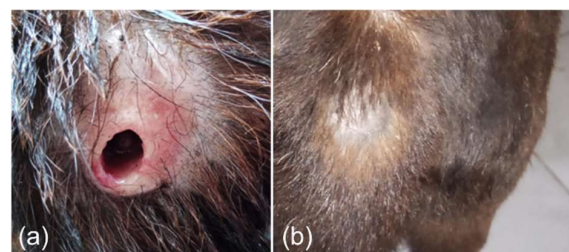
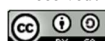


Figure 1. Progression of cutaneous myiasis in a dog. (a) tail-base wound before treatment; (b) closure 14 days after 2.5% *Nicotiana tabacum* leaf infusion.

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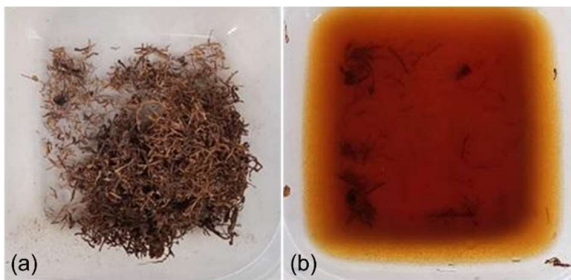


Figure 2. Preparation of 2.5% aqueous *Nicotiana tabacum* leaf infusion. (a) Dried tobacco leaf simplicia before processing. (b) Unfiltered tobacco leaf infusion after heating.

a concentration of 2.5% (w/v) (Figure 2). After cooling, the infusion was filtered and ready for use (Anggraini *et al.* 2020). It was applied by dripping 3–4 drops into the myiasis hole twice daily for 10 days. Manual larval extraction and wound suturing were not performed.

RESULTS AND DISCUSSION

Topical application of 2.5% aqueous tobacco leaf infusion was followed by larval emergence from the wound cavity, suggesting irritation, repulsion, or larvicidal activity. Tobacco leaves contain nicotine, an alkaloid that acts on nicotinic acetylcholine receptors and causes neuromuscular disruption, neurotoxicity, paralysis, and death (Ashirbekov 2020). However, this mechanism could not be confirmed because larvae were not subjected to viability testing or species-level identification. Tobacco-based preparations have larvicidal potential against myiasis-associated flies: tobacco leaf infusion showed *in vitro* activity in ruminants, causing larval mortality at 70% within 5 min (Putra *et al.* 2022). However, 2.5% was used topically, and the response may reflect larval expulsion, wound drainage, and mild lesions rather than larvicidal effect.

Myiasis was mild and involved a single wound at the tail base without extensive tissue invasion or systemic deterioration. The wound improved with topical treatment. By day 7, the lesion showed scab formation and partial closure, indicating a transition to the repair phase. Complete closure was observed by day 14 post-treatment (Figure 1b). However, hair regrowth at the tail base remained incomplete, suggesting that epithelial closure preceded complete cosmetic recovery.

The healing time in this case was comparable to previous reports of canine myiasis treated with conventional or commercial approaches. Complete healing has been reported within 10 days in dogs treated with ivermectin and antiseptic dressings (Shakya *et al.* 2018). Daily Dressol ointment was also associated with complete healing within 3–7 days, depending on wound severity (Panda & Pattanaik 2003). Dogs treated using spinosad showed complete recovery within eight days (Oliveira *et al.* 2018). In contrast, severe preputial myiasis may require up to 2.5 months for complete recovery (Orfanou *et al.* 2011). Severity influenced healing time.

Incomplete hair regrowth on day 14 was expected because epithelial closure precedes recovery after inflammation, tissue loss, scarring, or follicular damage. Thus, incomplete regrowth indicates delayed recovery; follow-up is needed. Cannot link tobacco leaf infusion to healing. Unidentified larvae and unassessed viability, nicotine absorption, and toxicity require safeguards before use.

CONCLUSION

Topical 2.5% aqueous *Nicotiana tabacum* infusion yielded larval emergence and wound closure by day 14 in a dog with cutaneous myiasis; however, efficacy and safety require confirmation.

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