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Short Communication

Molecular diagnosis and use of ethno veterinary herbal medicine in the successful therapeutic management of *Orf* in a buck

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Abstract

Contagious ecthyma (Orf) is a highly contagious, economically important viral skin disease of small ruminants caused by Parapox virus resulting in high morbidity. A one year old non - descript buck was presented to Large Animal Medicine Unit, Veterinary Clinical Campus, Rajiv Gandhi Institute of Veterinary Education and Research (RIVER) with the history of drooling of saliva, proliferative nodular lesions around the mouth and off – feed for the last one week. Around 2 g tissue sample was collected in duplicate in a sterile container with phosphate buffered saline and sent to Vaccine Research Centre – Viral Vaccines, Centre for Animal Health studies, TANUVAS for molecular diagnosis, Polymerase Chain Reaction. Based on the clinical signs and molecular diagnosis by PCR the case was confirmed as contagious ecthyma. The animal was treated symptomatically with Inj. Enrofloxacin, Inj. Meloxicam, Inj. Tribivet for 3 days and advised to follow the ethno veterinary preparation containing neem leaves, basil, turmeric, garlic and cumin seeds on the lesions thrice daily for five days. The animal gradually had a clinical cure emphasizing the fact that alternate therapy can always serve as valuable adjuncts to conventional medical therapy.

Keywords: Ethno veterinary preparation (NDDB), Goat, Orf, PCR

Highlights

- Molecular diagnosis (PCR) can be successfully employed for the confirmation of Orf in buck tissue sample
- Ethno veterinary preparation aided in speedy recovery and was cost effective in the therapeutic management of Orf
- Clinical outcome depends on the age of the animal and severity of the disease.

Contagious ecthyma also known as Orf, Contagious Pustular Dermatitis, Sore mouth and Scabby mouth, is an acute, contagious, debilitating and economically important zoonotic viral skin disease of sheep, goat and other wild ruminants (Nandi et al., 2011). Though not obvious papules and pustules are the initial lesions that develop at oral mucocutaneous commissure which progresses to raise moderately proliferative area of granulation, and inflammation covered with a thick, tenacious scab (Jaiswal et al., 2019). The disease can be diagnosed based on characteristic lesions at predilection site (skin). During an outbreak morbidity peaks at whereas case fatality rate reaches up to 5- 15 per cent. As there is no specific treatment the affected animals are managed symptomatically (Shivaraju et al., 2021). Alternative medicine, also known as complementary and alternative medicine (CAM), is a group of diverse medical and healthcare systems, practices and products that are not considered as a part of conventional medicine. But, there is a growing interest in alternative medicine in veterinary science due to concern over the safety and efficacy of conventional drugs and the desire for more holistic and natural treatment options. Ethno veterinary herbal preparations were successfully used in the treatment of turkey pox (Venkatesakumar et al., 2018) and Orf (Brahma et al., 2020).

A one-year-old black colour buck weighing around 10.2 kg was presented to large animal medicine unit, VCC, RIVER, with the history of inappetence, drooling of saliva, proliferative nodular lesions at the commissure for the past one week (Fig. 1). On clinical

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examination, the animal was dull and depressed with tenacious scabs covering the area of inflammation at the commissure was observed. Vital parameters were within the normal range. Whole blood was collected for routine haematology which revealed moderate anemia (Hb - 6.1 g% & PCV 17.8%) and leucocytosis (TLC - 23,000 cells/cmm). Scab sample was collected separately in a sterile PBS container in ziplock cover and shipped to Vaccine Research Centre – Viral Vaccines, Centre for Animal Health studies, Tamil Nadu Veterinary and Animal Sciences University (TANUVAS), Chennai for molecular diagnosis (PCR). Sample was processed and DNA was extracted from swab samples by EZ-10 spin column genomic DNA kit as per the instructions of the manufacturer (Bio Basic, Canada). The PCR procedure was performed according to Sambrook et al. (1989). The PCR products were visualized in a gel documentation system with a band size of 408 bp (Fig. 2). Based on clinical signs and PCR result, the case was confirmed as contagious ecthyma (Orf).

The animal was treated symptomatically with Inj. Enrofloxacin @ 5mg/kg b wt i/m to prevent secondary bacterial infection, Inj. Meloxicam @ 0.2 mg/kg b wt i/m was continued for three days to alleviate pain and inflammation. The goat was also given supportive care with vitamin B complex and oral hematinics. The owner was advised to apply herbal preparation topically over the lesion thrice a day for five days as recommended by Punniyamurthy (2021). Ingredients such as Garlic (5 pearls); Cumin (to be soaked for 15 mins); Turmeric powder (10 g); handful of Basil and Neem leaves are to be made as fine paste and applied on the affected sites thrice a day. Neem leaves (Azadirachtin) and turmeric (curcumin) are known for their antiviral properties (Brahma et al., 2020) Basil leaf (phenolic acids) has detoxification property, Garlic (allicin) has got the ability to improve collagen production and Cumin seeds (cuminaldehyde) an astringent and as a whole, the above mentioned herbs have the property of anti-inflammatory, anti-oxidant, anti-cancerous, anti-bacterial, anti-fungal, wound healing, immunomodulant and skin rejuvenation.This intervention had shown drastic improvement in the clinical condition on day 5 (Fig. 3) with complete recovery from oral lesions after 20 days of treatment (Fig. 4). Post treatment haematological evaluation on day 21, revealed gradual improvement with mild anemia (Hb –7.2 g % & PCV 22 %) and mild leucocytosis (TLC - 19000 cells/cmm). The owner was advised to maintain good farm hygiene, isolation of affected animals, quarantine the new stock and disinfect the shed and fomites. The present case emphasizes the fact that ethno veterinary medicine (Alternative medicine) can always serve as valuable adjuncts to conventional medical treatments (Akil & Saxena, 2023).



Fig. 1. Orf in a buck – Day 1

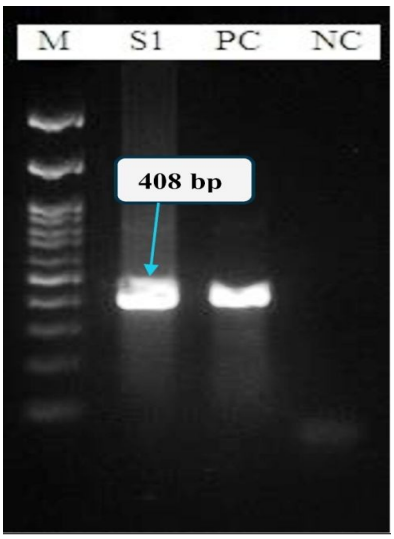


Fig. 2. Molecular diagnosis – PCR
Lane M – Marker 100 bp
Lane S1- Test sample
PC- Positive control
NC- Negative control

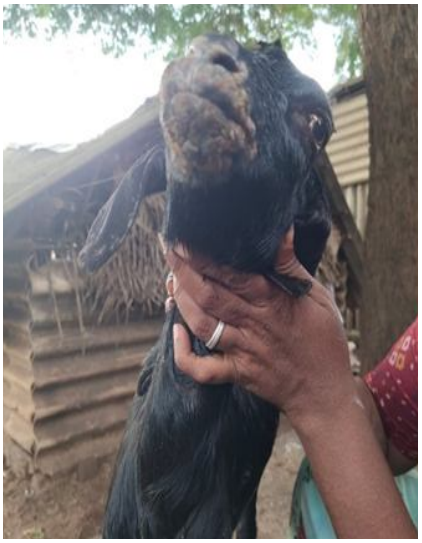


Fig. 3. Lesions in the buck on day 5



Fig. 4. Day 20 - Post treatment

In the present study locally available plants and products were utilized and the buck showed gradual improvement. Ethnoveterinary herbal formulations are gradually gaining popularity in the therapeutic management of common viral diseases such as pox (Venkatesakumar et al., 2018), Orf and FMD (Punniyamurtthy, 2021). The herbal preparations used in the present case is in concur with Venkatesakumar et al. (2018) who reported the effective use of herbal preparations in an outbreak of turkey pox in birds. There is a growing interest in alternative medicine in veterinary medicine due to concerns over the safety and efficacy of conventional drugs and the desire for more holistic and natural treatment options. However, the integration of alternative medicine into mainstream healthcare requires careful consideration of evidence based practices, safety standards and regulatory frameworks. By fostering collaboration, research and open mindedness, we can harness the strength of both conventional and alternative systems to provide comprehensive and patient centered care (Akhtar et al., 2000; Yameen et al., 2025).

Orf is an acute contagious and economically important zoonotic viral skin disease of sheep, goat, and wild ruminants with no specific treatment. Alternative medicine, also known as Complementary and Alternative Medicine (CAM), is a group of diverse medical and healthcare systems, practices and products that are not considered part of conventional medicine was found to be economical, effective and safe in the successful management of Orf in goats.

Conflict of interest: Authors declare no conflict of interest.

Author's contribution: DS, SN, KR, AA, PV: Writing and technical advice for this article; MM: Diagnostic procedures and technical advice.

Data availability statement: Necessary data is present concerning this case and shall be presented upon request.

Ethical approval: The study did not involve direct research on animals/zebrafish, all diagnostic and therapeutic procedures were performed within ethical guidelines and full consent of the owner.

Use of artificial intelligence tools: During the preparation of this work, the author(s) used Grammarly to correct grammatical errors. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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