# SUSPECTED PASTEURELLOSIS OUTBREAK IN A RABBIT BREEDING UNIT: A CASE REPORT

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## ABSTRACT

*This case report describes an outbreak of high morbidity and mortality in a rabbit breeding unit in Ile-Ife, Nigeria. Affected rabbits presented with respiratory signs, reproductive failures, and systemic illness. Necropsy of one rabbit that died in transit revealed severe tracheitis, sinusitis, pneumonia, gastritis, and chronic fibrinous peritonitis. Cytology of lung and heart blood smears showed short bipolar rods suggestive of Pasteurella multocida, supporting a tentative diagnosis of pasteurellosis ("snuffles") complicated by colibacillosis. Enrofloxacin at 10 mg/kg PO (orally) for three weeks with multivitamins (1 ml per 10 kg of live body weight I/m. V-Multinor, Jubaili Agrotec Group) was administered to the remaining adult rabbits. Pregnancy and changes in environmental temperature were suspected to be the stressors in this case. Hence, feeding schedules should be adjusted (feeding the animals in the morning when the temperature is cool and consistently refreshing the water during the day), and breeding practices should be modified to mitigate heat-related and breeding stressors. This case highlights the significance of respiratory and systemic bacterial infections in rabbit production and the need for ensuring biosecurity, disease surveillance, and breeding management practices.*

**Keywords**: ***Pasteurellosis, Pasteurella multocida, outbreak, cytology***,

## INTRODUCTION

Pasteurellosis, commonly referred to as "snuffles," is a widespread bacterial disease in rabbits caused primarily by *Pasteurella multocida*. It affects the upper respiratory tract and may disseminate systemically, resulting in pneumonia, peritonitis, and reproductive disorders (Rosell *et al*., 2000, and Tobin *et al*., 2025). *Escherichia coli* infections (colibacillosis) can co-occur, further complicating disease progression and outcomes (Okerman *et al*., 2012; Watts and Wigley, 2024). These infections are often exacerbated by stress, poor sanitation, or immunosuppression. In breeding units, such diseases can lead to major economic losses due to infertility, stillbirths, and high mortality in kits.

## METHODOLOGY

### *Case Presentation*

Thirty-five (35) female crossbreed rabbits purchased from a reputable farm in Ile-Ife were housed at the Teaching and Research Farm, Obafemi Awolowo University, Ile-Ife. The female rabbits were individually housed in cages with wooden frames and a wire mesh cage of 24 by 30 inches, with feeders for pelleted rations and automatic freshwater drinkers. The commercial pellet diet fed to the animals met the National Research Council (NRC). The does had already undergone three successful kindling and weaning. However, after successful kindling in September 2023, there was an abrupt loss of 137 litters within a week, which raised concerns. Mating in October will also result in repeated fatalities, which will result in immature, deformed, and stillborn litters. By December, there was mortality of seventeen breeders that displayed symptoms of nasal

discharge, oculoconjunctivitis, torticollis, and weight loss.

During the sudden environmental change, the wettest month, September, recorded the highest temperature of 35.5°C and average temperature of $31^0$C and 94.69% humidity, while the driest month, December, average temperature of 38.8°C and 54% humidity.

A life sick rabbit which died, during transit to the laboratory, was submitted for necropsy at the Department of Veterinary Pathology, University of Ibadan, Ibadan.

## RESULTS

### *Gross Pathology Findings*

Severe, diffuse haemorrhagic tracheitis and sinusitis with ecchymoses and non-collapsed, severely congested and oedematous cranioventral lobes with multifocal ecchymoses (2–4 mm) were noticed. Also, severe congestion of the gastric mucosa with mucus hypersecretion and Numerous white, cheesy exudates (1–2 cm) on the abdominal organs and intestines. The intestines were adhered with extensive fibrinous material and showed serosal ecchymoses (up to 3 cm).

### *Cytology*

Giemsa-stained impression smears of the lungs and heart blood revealed short, bipolar-staining bacterial rods, morphologically consistent with *Pasteurella multocida*.

### *Differential Diagnoses*

The differential diagnoses were pasteurellosis (Snuffles), colibacillosis, salmonellosis, septicaemia of other etiology, and toxoplasmosis (less likely due to gross pathology).

### *Diagnosis*

**Tentative diagnosis:** Pasteurellosis (Snuffles)

Diagnosis was based on clinical history, gross pathology, and cytology suggestive of *P. multocida*. No bacteriological culture was reported.

**Treatment:** The remaining animals were treated with Enrofloxacin at 10 mg/kg PO (orally) for three weeks with multivitamins (1 ml per 10 kg of live body weight I/m. V-Multinor, Jubaili Agrotec Group). It was recommended that feeding schedules be adjusted and breeding practices modified to mitigate heat-related stressors. Hence, the animals were fed during the cool part of the day, and cool water is available to the animals ad libitum. Reduction in the frequency of breeding was advised to be every three months instead of the six-week practice during this period. No more mortality was recorded after the intervention.

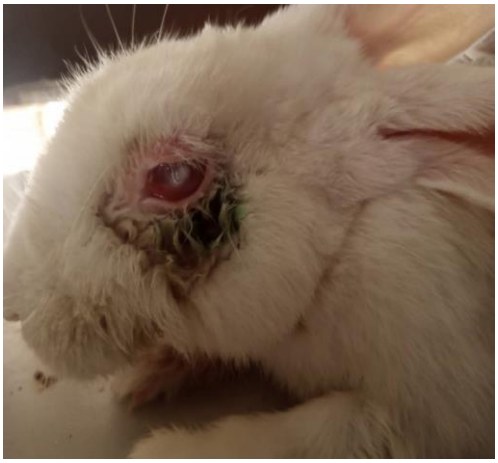

**Plate 1: Picture of occular discharge observed in sick rabbits**

**Plate 2: Aborted fetuses from one of the breeder rabbits**

**Plate 3: A rabbit with occuloconjuctivitis leading to blindness**

**Plate 4: Occulonasal discharge with matting of hair around the eyes in a rabbit breeding Unit**

## DISCUSSION

This case exemplifies the classical presentation of pasteurellosis in rabbits, with respiratory and systemic involvement. *Pasteurella multocida* is a commensal of the rabbit's upper respiratory tract but becomes pathogenic under stress of sudden temperature change from 35 °C to 38 °C and breeding pressure (the frequent breeding was 6 weeks after kindling) or immune compromise.

The observed reproductive failures (stillbirths, deformations) could also be attributed to systemic bacterial infection or chronic subclinical pasteurellosis leading to transplacental infection. The extensive fibrinous peritonitis and intestinal adhesions suggest chronic progression, potentially due to bacterial translocation or septicemia. The presence of cheesy exudates and adhesions is pathognomonic for advanced bacterial peritonitis, as also reported in chronic pasteurellosis cases (Boucher and Nouaille, 2018, and Mu *et al*., 2020). The flock's lack of vaccination and possible environmental stressors (temperature, breeding pressure, hygiene) likely exacerbated disease progression. The death during transit could have been precipitated by underlying respiratory compromise and septicemia.

## CONCLUSION

In conclusion, the outbreak of pasteurellosis observed in the rabbitry was primarily caused by *Pasteurella multocida* infection, which was significantly exacerbated by a sudden and sharp increase in environmental temperature. The resulting heat stress likely compromised the animals' immune defenses, allowing a normally commensal organism to become pathogenic. This led to a rapid spread of respiratory illness within the population, culminating in considerable morbidity and mortality. The economic consequences of the outbreak were substantial, including direct losses from rabbit deaths, increased treatment costs, reduced productivity, and potential long-term effects on breeding performance and market value. To prevent future occurrences, it is imperative to implement stringent environmental control measures, particularly adequate ventilation and temperature regulation alongside robust biosecurity practices, early disease detection, and stress mitigation strategies for rabbits.

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