



**UC DAVIS**

**VETERINARY MEDICINE**

California Animal Health and  
Food Safety Laboratory System

# CAHFS CONNECTION

LEADING DIAGNOSTICS NATIONALLY, PROTECTING CALIFORNIA LOCALLY • FEBRUARY, 2023



## Inside this issue:

### Detections of botulism type C toxin

#### Bovine

- Vegetative valvular endocarditis
- Bacterial septicemia
- Pine needle exposure

#### Small Ruminants

- Outbreak of bluetongue
- Copper toxicosis

#### Pigs

- Meningoencephalitis
- Vertebral abscess

#### Poultry

- Infectious coryza, polyserositis and aspergillosis
- Low pathogenic avian influenza

#### Other Avian

- Rodenticide intoxication in wild birds

## HOLIDAY SCHEDULE

CAHFS will be closed on Monday February 20 in observance of President's Day

## Detections of botulism type C toxin at CAHFS

Botulism type C toxin was detected in alfalfa cubes that were submitted to CAHFS from out of state, and which were associated with multiple cases of suspected botulism in horses from several different states (but not from California). Botulinum toxin has not yet been detected in gastrointestinal or liver samples from any of many horses tested so far. CAHFS is part of the Veterinary Laboratory Investigation and Response Network (Vet-LIRN) of the Food and Drug Administration, and it is via participation in this network that some of the out-of-state samples get submitted to our lab. Investigation of these cases is ongoing. CAHFS is one of the few laboratories in the US that offer botulism testing.



## Bovine

**Vegetative valvular endocarditis** was the cause of clinical signs in a 5-month-old Angus steer euthanized after a one month history of hind limb paresis followed by one week of hind limb paralysis and brisket edema. Tissues from a field necropsy revealed right atrioventricular (AV) endocarditis, bilateral AV endocardiosis, hepatic passive congestion and multifocal pulmonary abscesses. *Trueperella pyogenes* was isolated from both the liver and the lung, likely having reached those organs by vascular spread from the heart valve lesions. Although spinal cord was not submitted, it is possible that this organ was also affected by embolic lesions, which were responsible for the neurological signs observed.

**Bacterial septicemia** was the cause of sudden death in two, 4-year-old lactating cows submitted when a cluster of seven cows died within an 18-hour period in a 6,500-cow dairy farm. The source of infection in one of the cows was a large draining mammary gland abscess from which *Streptococcus dysgalactiae* was isolated. This animal had also myocarditis, adrenalitis and hepatic necrosis from which *S. dysgalactiae* was isolated. Hardware disease, which was the source of infection by *Trueperella pyogenes*, caused septicemia in the other cow that had epicarditis, pneumonia, hepatitis, splenitis and nephritis. *Pasteurella multocida* and *Histophilus somni* were also isolated from the pneumonic lungs of this cow.

**Pine needle exposure** was the probable cause of abortion in three fetuses submitted from a 35-cow beef herd in which 10 cows aborted in one week. Fetuses submitted were 6- to 8-month gestation with evidence of in-utero hypoxia. Using a newly developed, in-house assay under validation, tetrahydrogathic acid, a marker for pine needle exposure, was detected in thoracic fluid of two fetuses and abomasal fluid of the third. Excess pine needle ingestion may be associated with fetal hypoxia leading to abortion, birth of weak calves, poor uterine contractility and retained placentas.





# UC DAVIS

## VETERINARY MEDICINE

California Animal Health and Food Safety Laboratory System

### Lab Locations:

#### CAHFS – Davis

University of California  
620 West Health Sciences Dr.  
Davis, CA 95616  
Phone: 530-752-8700  
Fax: 530-752-6253  
daviscahfs@ucdavis.edu

#### CAHFS – San Bernardino

105 W. Central Ave.  
San Bernardino, CA 92408  
Phone: 909-383-4287  
Fax: 909-884-5980  
sanbernardinocahfs@ucdavis.edu

#### CAHFS – Tulare

18760 Road 112  
Tulare, CA 93274  
Phone: 559-688-7543  
Fax: 559-688-2985  
tularecahfs@ucdavis.edu

#### CAHFS – Turlock

1550 N. Soderquist Road  
Turlock, CA 95380  
Phone: 209-634-5837  
Fax: 209-667-4261  
turlockcahfs@ucdavis.edu

### Contributors

- Anibal Armien
- Javier Asin
- Patricia Blanchard
- Peter Chu
- Omar Gonzales-Viera
- Melissa Macias-Rioseco
- Rob Moeller
- Bob Poppenga
- Simone Stoute
- Francisco Uzal

### Small Ruminants

An **outbreak of bluetongue virus (BTV)** occurred in a 470-Rambouillet sheep flock from southern California between mid-October and early November 2022. Approximately 20 sheep died after developing runny noses, heavy breathing and foam coming out of the mouth. Two adult sheep were submitted for necropsy and diagnostic work up. One had severe pulmonary edema, hydrothorax, and subacute myocarditis, while the other had ulcerative lesions in the alimentary tract, including stomatitis, glossitis, rumenitis, omasitis, and abomasitis. RT-qPCR performed at CAHFS detected BTV in both animals, and the National Veterinary Services Laboratories (Ames, IA) identified the BTV as serotype 11. This serotype had been detected in California before; other BTV serotypes detected previously in California are 10, 13, 17, and, less commonly, 2. BTV infection is endemic in California and the majority of the clinical cases occur in late summer and fall, when the activity of the vector (*Culicoides* midges), is higher. Vaccination can be performed during the spring and helps to protect sheep flocks from being severely affected by BTV.

**Copper toxicosis** was the cause of death in an adult Barbados sheep. Postmortem findings included icterus, brown urine, dark gray kidneys and yellow liver with necrosis. Toxic levels of copper were found in the liver (230 ppm, normal 25-100 ppm) and kidney (80 ppm, normal 4-5.5 ppm).

### Pigs

**Meningoencephalitis** extending from an abscess at the base of the brain resulted in sudden onset of seizures, abnormal gait and illness in a 6-month-old Berkshire pig. *Trueperella pyogenes* and *Klebsiella pneumoniae* were isolated from the brain.

A **vertebral abscess** leading to spinal cord compression caused a 2-month-old female pig to lose the ability to use the back legs prior to euthanasia. The 4 cm abscess in the body of the first lumbar vertebra protruded into the spinal canal and compressed the spinal cord.

### Poultry

**Infectious coryza, polyserositis and aspergillosis** were diagnosed in a group of 27-week-old layers from a flock experiencing increased mortality, weight loss, listlessness and swollen eyes. On post-mortem examination, conjunctivitis, rhinitis, polyserositis and sinusitis were observed. *Avibacterium paragallinarium* was detected by qPCR in sinus and tracheal pools. *Avibacterium* sp. (most closely related to *Avibacterium avium* by 16S RNA) was isolated from heart and air sacs. One bird also had gross and microscopic lesions compatible with infection by *Aspergillus* spp.

**Low pathogenic avian influenza (LPAI) virus subtype H6N2** was detected in 7-month-old ring-necked pheasants (*Phasianus torquatus*) submitted from a 20,000 bird flock with a reported mortality of 1% and morbidity of 5%. Clinical signs included weight loss, sneezing and difficulty breathing, followed by death approximately one month after the onset of signs. The main lesions noted in the pheasants submitted were conjunctivitis, rhinitis and sinusitis. The lesions were complicated by *Escherichia coli* infection of the upper respiratory tract.

### Other Avian

**Rodenticide intoxication** was diagnosed in two avian wildlife cases. The first case involved a great horned owl that had the remains of a songbird and milo seeds in the stomach. Strychnine was found in gastrointestinal (GI) contents confirming intoxication by this substance. The second case involved the mortality of at least 45 cackler geese (a species related to, but distinct, from Canada geese). Grossly, the birds were well fleshed with the only notable gross lesions being pulmonary edema. Phosphine was detected in gizzard contents. The pulmonary edema and detection of phosphine was indicative of exposure to and intoxication by zinc phosphide, which releases phosphine gas in the GI tract.

