



UC DAVIS

VETERINARY MEDICINE
California Animal Health and
Food Safety Laboratory System

CAHFS CONNECTION

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Holiday Schedule

CAHFS will be closed on **Monday, May 27, 2013** in observance of Memorial Day.

Please contact your laboratory to plan your testing needs accordingly.

Bovine

Leptospirosis caused **red urine and fever** of 105.2°F in a 14-month-old Holstein steer on pasture. The Leptospira fluorescent antibody test on the kidney was positive. In addition, Leptospira immunohistochemistry and Steiner silver stains revealed small numbers of spirochetes consistent with Leptospira in the renal tubules. On histology, the kidney was inflamed and there was centrilobular liver necrosis probably from anemia due to red blood cell destruction with Leptospirosis. The Leptospira serology on the steer was negative suggesting the infection was acute and death occurred before the animal had time to mount an immune response.

Equine

Among the major causes of **equine infectious bacterial enterocolitis** diagnosed in California are *Clostridium perfringens* type C, *Clostridium difficile* and *Salmonella* sp. The clinical and postmortem diagnosis of enterocolitis in horses is often a challenge, as the history, clinical signs and lesions are not specific and often similar. Foals or adult horses may present with depression, anorexia, fever, diarrhea, colic followed by death and, occasionally, unexpected sudden death. Gross and microscopic findings include abundant bloody or green watery intestinal contents, a variably thickened small and large intestinal wall and an often ulcerated, necrotic and/or hemorrhagic mucosa. *C. perfringens* type C enteric infections are most commonly diagnosed in neonatal animals. Infection by *C. difficile* or *Salmonella* sp. can occur in horses of any age. In addition to a complete necropsy and histopathology, laboratory testing available at CAHFS for the diagnosis of diarrhea and enterocolitis in horses of any age include aerobic and anaerobic bacterial cultures, *C. difficile* culture, and *Salmonella* PCR and culture from tissues (preferred) or intestinal contents, and *C. difficile* and *C. perfringens* toxins ELISA panels from the intestinal contents.

Equine herpesvirus 1 with the neurogenic marker caused necrosis (malacia) and vasculitis with thrombosis in the **medulla of the brain** and the **lumbar spinal cord** in a 3-year-old Thoroughbred filly that had a fever for 2-3 days but was responding to treatment when she developed posterior ataxia. The virus was detected in the nasal swab by PCR during the febrile period and at time of death and by immunohistochemistry staining of affected areas of the spinal cord and brain where the virus was detected in the vessels.

Porcine

Swine dysentery and whipworms were diagnosed in a 3-month-old Yorkshire barrow pig. The pig, presented to CAHFS in lateral recumbency, nonresponsive, with a low body temperature (99°F), was euthanized. At necropsy, the colon was inflamed and contained loose red-brown feces. Victoria Blue stains of the colon revealed Brachyspira-like organisms. On histology, there was a diffuse colitis with numerous silver stain positive spirochetes within the necrotic epithelium. Anaerobic culture of colon content for pathogenic *Brachyspira* was negative but *B. hyodysenteriae* is difficult to isolate. The presence of typical spirochetes within necrotic colon tissue and compatible colon pathology was considered diagnostic for Swine Dysentery. Numerous **whipworms (*Trichuris suis*)** and small numbers of amoebic protozoa were also seen.

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Small Ruminant

Cryptosporidia caused severe **diarrhea, dehydration and death** in approximately 75 percent of the 1- to 3-week-old **goat kids** on one dairy. All three of the 2-week-old kids presented for necropsy were severely dehydrated and the intestines were dilated with tan watery content. Cryptosporidia were seen in the small intestine on histopathology and were detected in the feces by ELISA. Cryptosporidia is the most common cause of diarrhea in goat kids less than three weeks of age. Other causes of diarrhea in kids include attaching and effacing *E. coli*, *Clostridium perfringens* type C, K99 *E. coli*, *Salmonella*, rotavirus and poorly digestible feed. Older goats may experience diarrhea due to parasites (coccidia, abomasal or intestinal worms), copper deficiency, *C. perfringens* type D or *Yersinia* infection.

Multiple abortions due to *Chlamydia* sp. infection were diagnosed in a flock of 2600 bred **ewes** with over 50 lambs aborted over a 2 week period. Six fetuses and three placentas were submitted to CAHFS. Thickening exudate and discoloration of the placenta between and within cotyledons was found on gross examination and *Chlamydia* sp. were identified in Gimenez stained impression smears from the placenta. Placentitis with *Chlamydia* sp. was confirmed by histology and fluorescent antibody and immunohistochemistry testing. No significant changes were detected in the fetuses. *Chlamydia abortus* infection is one of the most common causes of abortion storms in sheep flocks in California. This case underlines the importance of submitting placentas in order to obtain a diagnosis in sheep as well as goat abortions.

Toxicology—Small Animal

A 2.5-year-old Labrador Retriever was presented to a veterinarian with signs of **poor mentation, muscle fasciculation, miotic pupils (constricted), hyperthermia, and generalized cutaneous erythema**. Abdominal radiographs revealed granular material in the stomach and intestinal tract. The veterinarian was suspicious of exposure to a cholinesterase-inhibiting insecticide after the pupils did not respond to a pre-anesthetic dose of atropine. Whole blood and stomach contents were submitted to CAHFS. Blood cholinesterase activity was not detectable which confirmed the suspicion of insecticide exposure. **Disulfoton, an organophosphorus insecticide (OP)**, was detected in the stomach content. Disulfoton is an extremely potent OP with lethal doses in the low mg/kg range. The compound is used to protect small grains, sorghum, corn, and other field crops, some vegetables, fruit, nuts, and ornamental and potted plants against certain insects. Small quantities are used on home and garden plants and for mosquito control in swamps. Disulfoton use has decreased in recent years; reflecting an overall decline in OP use primarily due to acute and chronic human and animal adverse health effects. In the absence of a known exposure to an OP, a diagnosis relies on clinical signs (classic DUMBELS signs: diarrhea, urination, miosis, bronchospasm, emesis, lacrimation, and salivation), depressed cholinesterase activity in whole blood (ante-mortem) or brain (post-mortem), and detection of a specific OP in samples of vomitus, stomach contents, or liver. Determination of cholinesterase activity can be done within a few hours by CAHFS on an appropriate sample. Detection of an OP will take longer, although samples can be tested on a STAT basis in some cases. Treatment of OP intoxication relies on reversing DUMBELS signs with atropine to effect and preventing irreversible inhibition of cholinesterase by administration of pralidoxime.

Poultry

Excess ammonia was the suspected cause of respiratory signs and increased mortality in a flock of 20-month-old layers and conjunctivitis and swollen eyes in a flock of 26-day-old broiler chickens. Ammonia damages the tracheal, sinus, nasal, conjunctiva and corneal epithelium, removes the cilia from the respiratory epithelium and causes excess mucus production which was found in both groups of birds submitted.

Other Avian

West Nile virus (WNV) myocarditis was diagnosed in a thin Northern Spotted Owl from Tuolumne County that was euthanized due to a broken leg in mid-February. The CAHFS and California Department of Public Health dead bird surveillance program has been detecting birds chronically infected with WNV throughout the year and not just during mosquito season.