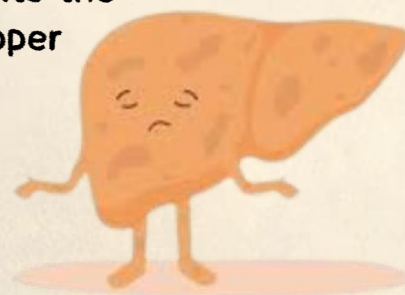


Copper poisoning or toxicosis

Copper toxicosis occurs after the sheep's liver capacity for storing copper has been exceeded, resulting in a sudden increase of copper into the circulation (which can be deadly). Sheep are more prone to copper toxicity than other animals because their liver is inefficient at excreting excess copper. There is a narrow range between the amount of copper (Cu) that is required in their diets versus that which can be toxic. A low intake of molybdenum (Mo) can cause toxicity at even lower intakes of copper.



2 There are two types of copper toxicosis: acute and chronic. Acute occurs as the result of accidental administration or ingestion of toxic amounts of copper. With chronic (more common), extra copper is accumulated in the liver over time. Stress usually triggers the release of stored copper from the liver.

Risk factors (causes) for toxicity

- Feeding rations or mineral supplements intended for other livestock. Errors in feed formulation.
- Feeding by-products that are high in copper
- A low intake of copper antagonists (Mo, S, Fe, and/or Zn) favors copper accumulation.
- Copper sulfate in footbaths or given as a dewormer
- Grazing pastures fertilized with pig or poultry manure or treated with copper-containing pesticides.
- Contaminated water sources (e.g., copper pipes)

Symptoms

- Lethargy, depression
- Fever
- Jaundice (A)
- Anemia
- Red or brown urine (B)
- Weakness
- Breathing difficulty
- Recumbency
- Found dead

Action

- Confirm diagnosis
- Look for sources of copper
- Usually, poor prognosis for animals with clinical signs
- Better prognosis for animals still accumulating copper
- Medications (chelating agents) that remove copper from the body (Vx).



Prevention

- Consider all sources of copper
- Do not feed mineral supplements or rations that have been formulated for other livestock.
- Avoid supplements with copper
- Do routine evaluations of feedstuffs for copper and molybdenum concentrations
- The ideal ratio of copper to molybdenum in the sheep's diet is between 6:1 and 10:1.
- Do periodic liver biopsies for evaluation of tissue copper concentrations
- Maintain proper soil pH

Susceptibility varies by breed. With Suffolk, Texel, Blueface Leicester, and Charollais breeds being at higher risk for copper toxicity. Merinos are the most tolerant breed. Hair sheep are considered to be more tolerant than woolled sheep. Lambs are more susceptible to copper toxicity than mature sheep due to their higher capacity for copper absorption.

Liver copper concentrations above 500 ppm (dry weight) are considered toxic. Normal is usually 80 to 200 ppm (dry weight).

