

Acidosis and the Cattle Producer

Research Problems

Eddie Collins

Lactic Acidosis

- Acidosis is the **most** significant nutritional issue that cattle producers deal with. Annual losses are estimated at 1% of production.
- It can occur in any situation where ruminants are fed a concentrate ration.

Cereal Grains include:

- **Corn**
- **Barley**
- **Sorghum**
- All are carbohydrates, which provide an excellent energy source, but are subject to microbial fermentation in the rumen.



Feedlots



Dairies



Steve Tharp

Veterinarian

- Small operators (such as a kid with a 4-H steer) often have a more serious run in with acidosis.
- Lack of knowledge about feeding principles.



← “Try to go too far, too fast”.

What causes Acidosis?

- Switched too rapidly from a predominately forage based diet to a concentrate based diet.
- Allowed access to a large amount of grain.
- A lack of good forage in the diet.
- Improper mixing of a ration.

What causes Acidosis?

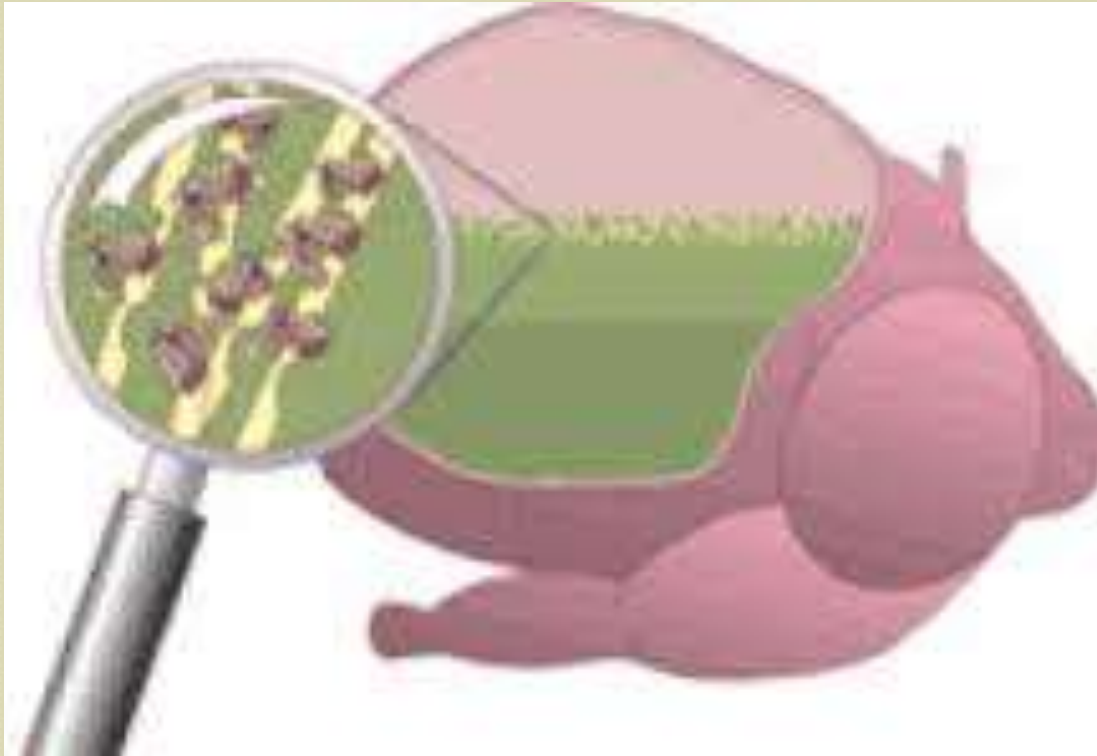
- Carbohydrates are subject to fermentation by the bacteria in the rumen.
- Too much grain, too quickly → an increase of lactic acid producing bacteria in the rumen.
- The grains ferment rapidly causing the rumen to become acidotic → lowers the pH of the rumen.

Microbial fermentation in the rumen

- As the carbohydrates ferment they produce lactic acid (D and L forms).
- Rumen flora most responsible for production of lactic acid is *Streptococcus Bovis*.
- Both forms of lactic acid (D and L) are produced and absorbed, but the D form cannot be used efficiently.
- It accumulates, and eventually can be absorbed into the bloodstream, lowering blood pH.

Types of Lactic Acidosis

- Sub-acute (marginal) acidosis → less severe, can be chronic.
- Acute acidosis → can be deadly.



Symptoms (sub-acute)

- Reduced feed intake
- Excess salivation
- Diarrhea
- Signs of being “uncomfortable”
- Irritability



Symptoms (acute)

- Same symptoms as sub-acute but also may exhibit:
- De-hydration
- Decreased rumen motility
- Increased pulse/respiration
- Increased temperature
- Coma
- Death



Symptoms (acute)

- Acidosis can suppress the immune system, which can cause many other serious conditions to arise, including:

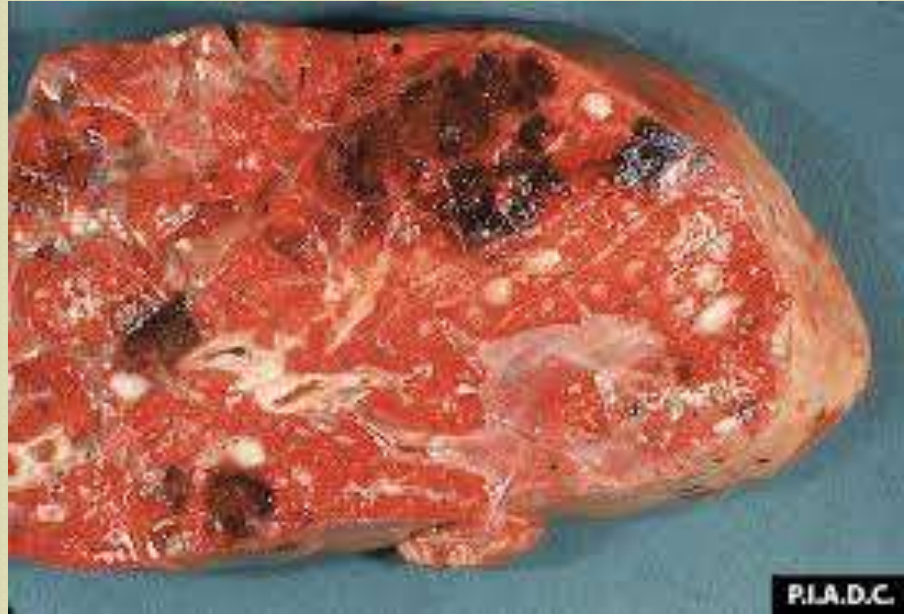
- Laminitis →
- Ruminitis
- Liver abscesses



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Symptoms (acute)

- Sole ulcers
- Sole abscesses
- Polioencephalomalacia (PEM)
- Sudden death syndrome
- Clostridial infections
- Transient diarrhea (light colored with a sweet/sour aroma) or
- Lung hemorrhages



Treatment

- Remove the grains from the ration, and increase the amount of roughage → this option may not be economically pertinent for large scale producers.
- They are selling pounds of beef or milk.
- Drenching with a solution of Sodium Bicarbonate → relatively cheap, and very effective.

Tad Tipton

Veterinarian

- His most common treatment technique for incidents of acidosis is to drench with a solution of sodium bicarbonate.
- The solution is introduced through intubation.
- “Same idea as a human taking a tums for heartburn”.



Prevention

- The best way to deal with acidosis is to take steps to prevent it.
- Avoid access of cattle to large amounts of concentrates.
- Avoid erratic feeding.
- Gradually change from a low level of grain to a high level.
- Addition of buffer salts to the ration.

Don Montgomery

Former State Vet

- The use of an ionophore antibiotic (Rumensin) has been used to reduce the occurrence of coccidiosis.
- “Not necessarily related to acidosis, but it helps prevent it as an added benefit”.
- Again the best prevention method is good management.



Ionophores:

- Feed additives used in cattle to increase weight gain and feed efficiency.
- Ionophores alter ruminal fermentation patterns.
- Non-therapeutic antibiotics, used to treat instances of coccidiosis in cattle, but they help reduce instances of acidosis as well.
- Disrupt the ion concentration gradient across microorganisms.

Lactic Acidosis

- A universal problem among cattle producers.
- Can be very detrimental, however through good management practices it can be minimized.
- Utilizing medicines available to todays producer and employing proper feeding procedures will help producers deal with this universal problem.

Sources

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