Acidosis and the Cattle Producer

Research Problems
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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
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.
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 today’s producer and employing proper feeding procedures will help producers deal with this universal problem.
Sources

- Montgomery, Don. Personal interview. 18 Nov. 2013.
- Tharp, Steve. Personal interview. 18 Nov. 2013.
- Tipton, Tad. Personal interview. 18 Nov. 2013.