

Colostrum and the Health of Newborn Kids

By Jack Mauldin

I have written this article because we were having difficulty understanding the relationship between

- The importance of colostrum
- newborn kids getting or not getting colostrum
- how fast and how much colostrum they needed
- when to vaccinate the dam and when to vaccinate the kids.

The following information came from three goat medical books and I tried to simplify the language and combine it together. I may or may not have succeeded.

Antigen is the medical name for a substance that when introduced into the body, stimulates an antibody (a disease fighter). The substances that can generate antibodies can be from bacterial toxins and bacteria. I will use the word “bacteria” instead of “antigen” in the rest of the article for easier reading.

Antibody is a disease-fighting protein. There are other medical names but I will only use the word “antibody” in this article for ease of reading. Antibodies are produced by animals in response to bacteria or bacterial toxins in the body and are very specific for that specific bacteria problem. Bacteria, in the presence of its specific antibodies is destroyed or neutralized. The end result is the goat becomes immune and is protected from that specific bacteria problem.

One way to produce antibodies (immunity) is to vaccinate, but that takes time and newborn kids need protection immediately. An alternate method to produce immunity is to provide the actual antibodies in a ready-to-use form such as in colostrum. This is known as passive immunity. It provides immediate treatment or prevention of a specific threat, like bacteria or a toxin capable of causing diseases in the kids. Remember the passive immunity protection will be short-term, lasting only about ten to fourteen days. For long-term protection, vaccinations should follow. Colostrum is an example of passive immunity as opposed to active immunity produced by vaccines that require a minimum of two to four weeks before the body can produce its own effective immunity.

No antibodies pass between the placenta to the fetus. Therefore newborn kids depend on intestinal absorption of ingested antibodies from the colostrum to provide a ready supply for attacking of bacteria for the first weeks of life. A newborn kid's body is not equipped alone to provide an adequate defense against acute infections for approx the first 6 weeks of life. That is the reason good colostrum is required to help protect newborn kids until their own immunity system is ready. Adequate passive transfer requires delivery of a sufficient quantity of good-quality colostrum into the gastrointestinal tract as well as adequate absorption of antibodies from the colostrum into the blood.

Each kid should receive colostrum within the first 6 hours of birth, preferably during the first hour, either directly fro the dam or by bottle. Newborn kids need to receive 10-20% of their body weight in colostrum within 3-12 hours after being born. 15% of body weight for an 8 lb kid would mean around 18 oz needed during the 12 hour period. Within hours of being born, the kid's ability to utilize the colostrum is reduced and the quality of the colostrum from the doe becomes poorer, as she begins to produce normal milk. This means it is critical for newborn kids to get their colostrum as soon as possible.

The concentration of antibody in colostrum declines rapidly after the first 6-12 hours after birth. Colostrum absorption decreases rapidly from birth through 36 hours of age. In calf and lamb, maximal absorptive capacity is believed to last for around 6 hours after birth, with all absorptive capacity absent by 24 hours. Goat kids may be able to effectively absorb antibodies for a longer period, perhaps as long as four days. The fact that the concentration of antibody in colostrum decreases rapidly after the first 6-12 hours also underscores the importance of early ingestion. Colostrum also contains large quantities of fat-soluble vitamins that do not cross the placenta. The most important of these are vitamins A, D, and E, which are important in bone development and the immune of inflammatory response.

Failure of kids to absorb adequate antibodies in the immediate period after being born predisposes young goats to serious infectious disease problems and high mortality rates.

Failure to suckle adequate colostrum at birth contributes significantly to the chances of early kid deaths. In a survey, 92% of colostrum-deprived kids that died did so within two days of birth. Another study of antibody levels measured in newborn kids eighteen hours after ingestion of colostrum and an average amount was determined. In the next two months, mortality rates of

kids with less than the average amount of antibodies was 44% but was only 3.8% for those with higher levels of antibodies than the average

There can be problems with newborn kids getting the required quality colostrum. Ensuring cloistral quality is best done through good nutrition, health care and vaccination of the dam. The doe experiences an increase in antibody production, in the weeks preceding kidding and antibodies are transported into the colostrum. Older does are likely to have a wider experience with diseases they have become immune to compared to young does and provide a more diverse spectrum of protective antibodies in their colostrum that will be passed on to their kids. Administration of vaccines six weeks prior to kidding, followed in two weeks with a booster, provides the highest quantity of protective antibodies in the colostrum. Breeders need to ensure other kids do not start nursing from the doe prior to her kidding and that the doe is not milked to release pressure on the udder. Pregnant does have been known to steal another doe's kid before having her own. These actions start to dilute the colostrum even before the kids are born.

Based on studies of the disappearance of certain antibodies from kids after colostrum ingestion, the half-life of passively acquired antibody is approx 12 days, with some antibody still detectable in most kids between 5-6 weeks of age. Persistent antibodies may inhibit active immunization with vaccines. When colostrum-fed kids were immunized with a similar vaccine their dams had been previously immunized with, they showed no measurable antibody response to immunizations at birth and four weeks of age and responded only at 8 weeks of age when passive antibody levels to the protein had diminished. The passive antibodies cancel out the active antibodies from the vaccine. Therefore it is best to wait until eight weeks old to vaccinate kids if the dam had been vaccinated just prior to her kidding so the two don't cancel each other.

There can also be problems from the kids getting the initial colostrum. Problems in ingestion can arise from weak and sick kids, competition with other kids, and separation of a kid from the dam directly after being born Goats are prone to many of the causes of failure of passive transfer because of their tendency to have numerous offspring; the earliest nursing, most vigorous offspring may ingest more than their share of colostrum.

If colostrum is unavailable, closing the gut as quickly as possible by feeding milk, maintain high standard of hygiene and possibly administering preventive antibiotics offer the greatest prospects for preventing infectious disease.