

Why inflammation matters?

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Recent research demonstrated that systemic inflammation, which occurs in all cows and heifers in transition period (2-3 weeks before, 2-3 weeks after calving), is the main cause of metabolic disorders of fresh cows (Barragan et al., 2020, 2021, Baumgard et al, 2021). It has been proved (B.Kuhla, 2020) that increased concentration of proinflammatory molecules in the blood around calving activates the “satiety center” in the brain, so the cow thinks she is already full and stops eating. This triggers mobilization of fat reserves in the body, that may result in fatty liver, ketosis and other metabolic issues.

What should we do to reduce inflammation in transition period?

In order to reduce negative impact of inflammation, our first priority must be creation of a **low stress environment** for the cows around calving through better comfort and management: avoid overcrowding in transition period, assure comfortable resting places, adequate ventilation and cooling, properly balanced rations and consistent feed bunk management. Low stressed, happy cows have increased endorphin concentration in their blood (“hormone of happiness”), that stimulates appetite.

But there are also additional tools available that can help us to efficiently modulate inflammation in transition period, such as **non steroid anti-inflammatory drugs** (NSAID) – aspirin (ASA), meloxicam, flunixin meglumine. Recent research from the PennState University demonstrated very high efficiency of aspirin (ASA) boluses in transition period, that resulted in reduction of health problems, improved milk production and fertility, lower somatic cell count in milk (Barragan et al., 2020).

Should primiparous and multiparous cows be treated in the same way?

It has been shown that **multiparous cows** responded best when ASA boluses were administered **within 2 days after calving** (Barragan et al., 2020, 2021). Multiparous cows that received ASA produced **1.45 kg/d more milk** during the first 60 days in milk than untreated cows, became pregnant 20 days sooner and had 5% less pregnancy loss at first service.

At the same time, the best timing to apply ASA boluses for **primiparous cows was about 14 before expected calving date**. The reason to make this treatment of heifers earlier is that at the time of calving heifers tend to have much higher inflammation as compared to the older cows, thus ASA boluses may not be potent

enough to decrease inflammation if applied right at calving. Amazingly, heifers treated with ASA 2 weeks prior to calving produced 750 kg more milk within the first 150 days in milk (**5 kg/d of milk yield improvement**)!

What are requirements to the boluses?

- 1) The bolus should contain acetylsalicylic acid
- 2) The single treatment should provide **124 grams of ASA**
- 3) If the bolus concentration is **31 grams of ASA per bolus**, then the single treatment should include **4 boluses**
- 4) If your supplier provides lower ASA concentration in the boluses, **adjust the number of boluses per treatment to reach 124 g of ASA**. For example, apply 8 boluses per treatment, if ASA concentration is 15.5 grams/bolus.

When to apply ASA boluses?

- 1) **Multiparous cows:** 2 applications (124 g ASA per treatment) within 2 days after calving: first application should be done within the first 12 h after calving and the second treatment 24 h after the first application.
- 2) **Primiparous cows:** 1 application (124 g ASA per treatment) about 14 days (2 weeks) before expected calving date.

Have questions? Contact your local Grand Valley Fortifiers representative for more information.

References:

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