Protect herd health and performance with oregano essential oil

Securing health and performance of the herd throughout the lifetime of the animal helps to protect the substantial investment by maintaining the productive lifespan of the animal for longer. The benefits of supplementing feed or milk with natural phytogenics, such as oregano essential oil (OEO), are well established in pre-weaned calves.

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With a growing number of published performance trials alongside proven efficacy in the commercial environment, confidence to use such products amongst vets, nutritionists and producers is growing.

With the challenge of climate change and the need to reduce the prophylactic use of antibiotics, more attention is turning to the benefits these phytogenics may confer in mature animals and those most at risk from higher levels of metabolic stress.

For transition cows, the risk of metabolic disease is high, and this can result in reduced performance, reproductive failure and an increased likelihood of involuntary culling.

The transition period both pre- and post-calving is a stressful time and this increase in oxidative stress can make transition cows more susceptible to impaired immune function, elevating risk of disease. Disruption to feed and social behaviours can further exacerbate the issue.

University trial

A recent trial carried out at the Federal University of Rio Grande do Sul in Brazil, by Dr Fischer and her group, aimed to determine if one of two natural phytogenic dietary supplements, oregano essential oil or green tea extract, may help to support transition cow health and performance.

Twenty-four Jersey cows, approximated 400kg bodyweight, 2.7 lactations, were split into one of three dietary treatment groups from 21 days pre-calving to 21 days post-calving.

These groups were as follows;

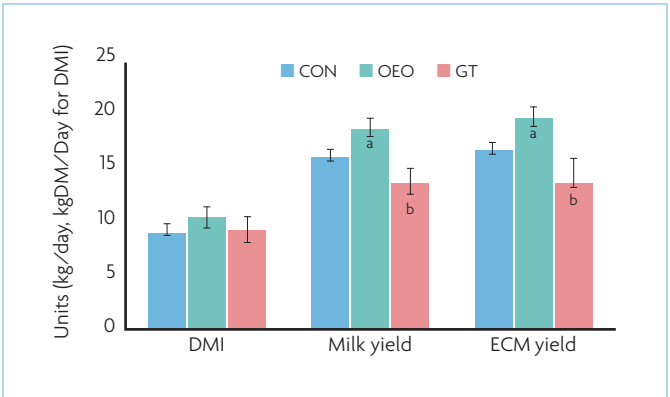
- A control group (standard diet with no additives).
- An OEO supplemented group (standard diet supplemented with Orego-Stim from Anparo at 10g/head/day).
- A green tea supplemented group (standard diet supplemented with 5g of green tea extract per day).

Improved feed behaviour and social interactions pre-calving

Whilst the supplementation of OEO and green tea had no effect on bodyweight or body condition during the course of the trial, it was found that, during the pre-calving period, cows offered OEO visited feed troughs less often. However, these cows had fewer visits where no feed was consumed and tended to spend more time ruminating than other groups.

This may allow for better feed digestion and utilisation, possibly a reason for the higher plasma calcium found in these animals. Incidences of aggressive episodes in cows pre-calving were significantly reduced in OEO and green tea supplemented cows compared to the control group, indicating that these phytogenics had a calming influence on the cows' behaviour, thus helping to minimise stress.

Fig. 1. Dry matter intake (DMI) (kg DM/day), milk yield (kg/day) and energy corrected milk yield (ECM) (kg/day) post-calving in cows from the control group (CON), OEO supplemented group (Orego-Stim, Anparo plc) or the green tea extract supplemented group (GT). Different letters indicate significant difference (p<0.01) (Stivanin et al., 2019).



Improved milk yield and immune function post-calving

Post-calving, the benefits seen with OEO supplementation were substantial. Cows from the OEO dietary group tended to have higher dry matter intakes and produced significantly greater milk yields and energy corrected milk yields than green tea supplementation and tended to produce more than control cows (Fig. 1).

Cows subjected to oxidative stress are likely to have impaired productivity as well as reduced immune function. Measuring the somatic cell count (SCC) of milk can be a good indicator of cow health, with high levels suggesting infection as well as causing an altered mineral flow in the udder, which can result in a higher pH in the milk and lower production.

The SCC of milk was analysed daily between days 5-21 of lactation. It was found that cows receiving dietary OEO supplementation had significantly lower SCC, by 62% and 50% compared to levels in milk from

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cows in the control or green tea groups respectively.

Supplementing dairy cow diets with OEO in this study helped to improve milk yields, reduce SCC and maintain a lower milk pH. This may be due to properties offered by the specific OEO additive used in the trial, which is a unique source of 100% natural OEO. Natural OEO may contain over 100 active compounds, some of which are known to convey antimicrobial, anti-inflammatory and immunomodulatory properties, as well as proven antioxidant function.

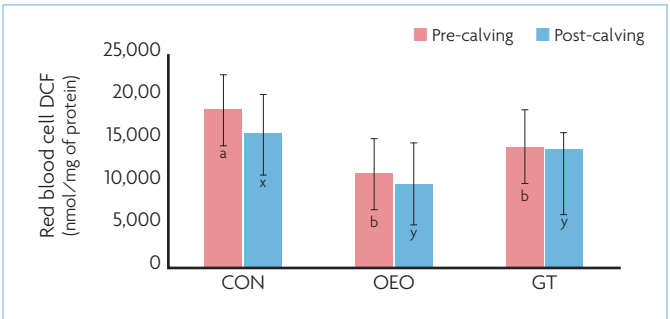

Fig. 2. Dichlorofluorescein (DCF) diacetate oxidation (nmol/mg of protein) in red blood cells from blood samples taken from cows in the control group (CON), OEO supplemented group (Orego-Stim, Anparo plc) or the green tea extract supplemented group (GT) both pre- and post-calving. Letters a-b, x-y, indicate significant difference between treatments (p<0.05) (Vizzotto et al., 2021).

Supporting antioxidant status

Antioxidants can help to reduce incidence of oxidative stress, helping to support performance and immune function.

For transition cows, antioxidant function is particularly important as these animals are highly susceptible to impaired immunity and increased disease prevalence, elevating the risk of poor performance or involuntary culling.

During the trial period, blood samples were taken on days -28, 0, 2 and 28 relative to calving in order to determine the antioxidant status of the cows, using a variety of tests including the ability to reduce dichlorofluorescein (DCF) diacetate oxidation that indicates the level of harmful free radicals.

The results indicated that both OEO and green tea supplemented cows had significantly lower DCF levels both pre- and post-calving, demonstrating an increased antioxidant activity and a reduced level of oxidative stress compared to control cows (Fig. 2).

Post-calving, cows fed OEO also had significantly higher glutathione (GSH) levels, indicating reduced metabolic stress.

Supporting the redox status of the calf

When essential oils are supplemented in the diet of dairy cows, the active compounds within the oil may transfer from the dam into her milk. Therefore, these compounds may be passed onto the newborn calf and support their redox status.

The redox status is the balance between the presence of oxidants and antioxidants and it is very important that this balance is optimal for newborn calves that are born with a naïve immune system.

The more antioxidants present, the lower the risk to the calf of oxidative stress. Interestingly, the study found that calves fed milk from cows supplemented with OEO also had significantly lower levels of free radicals, just like their mothers suggesting a better redox status in these calves compared to calves born to cows in the control or green tea groups.

Therefore, supplementing cows with OEO pre-calving may allow for transfer of active compounds to the milk, benefitting the redox status and supporting overall health of the newborn calf.

Protecting herd health and performance – naturally

The benefits to dairy producers when supplementing diets or milk with a natural phytogenic, such as OEO, particularly during periods of challenge or stress, is usually associated with fewer losses. Products which deliver a consistent, high quality source of OEO offer producers a natural solution to support health and performance and boost profitability. ■

References are available from the author on request