

Bioavailability is vital to reaping the benefits of feeding antioxidants

Mopping up free radicals

The important role that antioxidants play in maintaining cow health and fertility is well documented. But there's more to it than simply adding more vitamin E or selenium to cow rations. We find out more about a broad-spectrum additive why it's important to feed these 'nutrients' in the right form.

text **Rachael Porter**

Eating your greens just like your mum told you to – particularly during the long winter months – is vital to keeping your immune system in tip-top condition and those colds and sniffles away. But what about your girls? Are they getting a 'boost'

– in the form of antioxidants – from their winter ration? If they're not – or you're not sure – then help is at hand. Antioxidants in animal nutrition are moving up a gear. Benefitting from Provimi's research in this area, SCA NuTec has launched a new

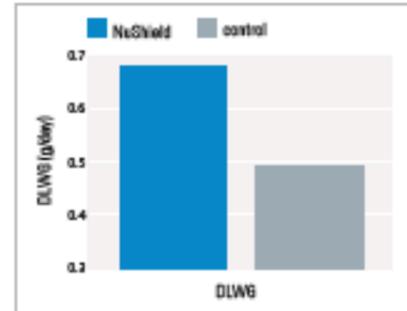


Figure 1: Daily liveweight gain in calves from birth to 15 days old

broad-spectrum antioxidant that can improve immunity and help to improve cow health cost-effectively. Including antioxidants, like vitamin E and selenium, is common place in dairy rations. "But we are now aware of added

Don't over feed vitamin E

'Free radicals' are buzz words, but understanding their origin and action explains exactly why they should be kept well under control through correct nutrition.

Animals are under oxidative stress when there are excess free radicals in the body. These free radicals are formed from metabolic processes. An excess is particularly common around calving and during early lactation. Poor

management and nutrition and poisoning with fungicides and mycotoxins also create oxidative stress. This stress lowers the animal's immunity, leaving her prone to disease and infection.

"To overcome this, we need to improve the antioxidative status of the cow and we have typically achieved this by including vitamin E in the diet," says Mr Downey. "There has been a temptation

to increase levels of vitamin E if a disease breakdown occurs, such as mastitis.

"We need to update our thinking because it appears possible to overdose on vitamin E. Including vitamin E at higher levels can actually depress immunity. It is often an expensive route too.

"But a combination of antioxidants, such as vitamin E and NuShield, can complement each other and improve immunity cost effectively."

benefits of using a combination of antioxidants rather than a single product," says ruminant specialist Norman Downey.

This has led to the development of NuShield – an antioxidant product that contains naturally occurring flavonoids. These are compounds that are present in a wide range of plants and fruits. Due to the levels of flavonoids and the unique extraction process, the product

offers much higher bio-availability of antioxidants to the animal than vitamin E or vitamin C.

"Our trial results have shown that the antioxidant status of cows fed on diets including NuShield compares favourably with cows fed diets that include more traditional antioxidants such as vitamin E," says Mr Downey. "But taking this a stage further, a combination of antioxidants, including the new product and vitamin E, is much more effective than a single antioxidant at higher levels."

Provimi trial work shows the benefit of feeding a combined package of antioxidants. Growth rates in a group of 16 calves were compared, where half were fed a control diet of 18% CP creep and the other half had the 18% CP creep with NuShield.

Weight gain at 15 days old in the group with NuShield included was 39.2% higher and the average daily gain was 38.8% better – at 683g/day compared with 492g a day for the control group, as shown in Figure 1.

Free radicals

"Using the correct combination of antioxidants means that we can provide better defence against free radicals and improved immunity compared with the traditional approach of simply increasing vitamin E and/or selenium."

As well as providing antioxidant benefits, the product has been shown to stabilise vitamin E and increase its regeneration within the animal. Up to 50% of vitamin E can be replaced in the diet where NuShield is used. Based on current prices this is very cost effective.

"Producers and their nutritionists should look at the broader picture of antioxidants, and consider using a recommended combination of vitamin E and NuShield rather than vitamin E

alone to improve the immunity status of their cows," adds Mr Downey. The product is available via premixes and minerals or can be included into compound feed and blends.

Alltech's Graeme Smith agrees that antioxidants are more often than not overlooked by producers. "To be fair there are so many other factors to consider when formulation dairy rations, but making sure that there's enough selenium – a powerful antioxidant – in the diet will pay dividends."

Vital nutrient

Somatic cell counts are just one area that can suffer if cows are deficient in selenium. "And most herds are potentially deficient in selenium because our soils are low in this vital nutrient, which means that only low levels can be found in forages and home-grown cereals," says Mr Smith.

If there's not enough in cow rations then immunity is suppressed. "Cows are more susceptible to diseases, such as mastitis, and SCC may be high – or start to climb. Fertility can suffer too."

Selenium triggers the hormone relaxin – vital if the cow is to successfully expel the placenta after calving. "And if she's deficient, this can be difficult and she may develop endometritis."

Straight sodium selenite is not stored in the body, so daily 'dosing' is required – about 4mg/cow. And feeding it along side vitamin E is also essential as this antioxidant plays a crucial role in selenium mobilisation within the cells of the body. "It's important to feed the two together and in a form that can actually be stored within the cells and used when the body faces a challenge, such as Sel-Plex, which is yeast grown in a selenium-rich medium.

"It can be broken down and used to fuel the immune system in times of stress." |



Hidden benefits: checking – and boosting – antioxidant levels in your herd's ration could pay health and fertility dividends