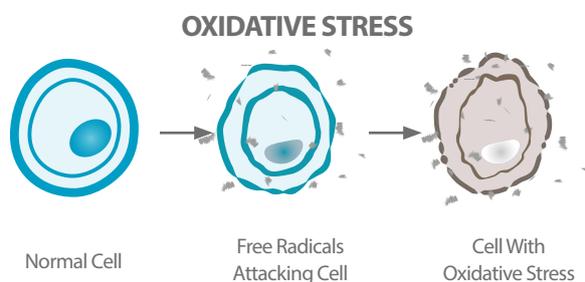


# Melofeed® Next Generation Antioxidant

## Oxidative Stress In Animals

Damage to cells occurs every day for all animal species. This damage is caused by oxidative stress, an imbalance between the amount of damaging free radicals that are produced and the ability of the body to prevent or counteract their harmful effects. When cells become damaged through oxidative stress it reduces the ability for these cells, and therefore the body, to function effectively.



Oxidative stress is very serious - in humans oxidative stress has been found to contribute to ageing and diseases such as Alzheimer's, Parkinsons, rheumatoid arthritis, kidney failure and many others<sup>1</sup>. For animals, oxidative stress has been associated with several conditions. **Some examples include:**

- **Pneumonia and sepsis in pigs<sup>2</sup>**
- **Higher susceptibility to intramammary infections and mastitis in cows<sup>3</sup>**
- **Impaired uterine contractability in ewes and cows, reducing the transport of sperm to the ova<sup>4,5</sup>**
- **Recurrent airway obstruction in horses<sup>6</sup>**
- **Diminished white blood cell function<sup>7</sup>**

Therefore even though we can't see oxidative stress and cell damage, the impact can be severe.

## Why do we need antioxidants?

Antioxidants are molecules that can 'stabilise' or 'deactivate' free radicals before they are able to cause harm to cells. By counteracting the free radicals antioxidants are able to restore balance in the body and therefore reduce oxidative stress.

## Are all antioxidants the same?

Antioxidants can be made *in vivo* (by the animal) or derived from the diet. Given the complex nature of oxidative damage, there are many ways the body tries to neutralise the damaging effect on the cell(s). There are two kinds of antioxidants:

- **Primary:** antioxidant enzymes that **prevent the formation** of damaging reactive oxygen species by converting the compounds to water and oxygen. This effectively helps neutralise the cell to prevent damage occurring in the first place. These enzymes are the most effective antioxidants<sup>8</sup> as they are directly involved in preventing the damage occurring in the first place, ensuring a stable base of health for the animal.
- **Secondary:** these **neutralise the effect** of reactive oxygen species that can cause oxidative damage. When the system is overwhelmed (superoxide dismutase deficiency for example), the secondary antioxidants (vitamins A, C, and E for example) take the lead in neutralising free radicals that cause cell damage. They repair damage and avoid amplification of free radical formation, which would be detrimental to biological functions. Therefore even if a primary antioxidant is fed, supplementing secondary antioxidants improves the protective effect.



For more information on this subject call...  
Call 0800 REMEDY (736 339)  
[www.nutritech.co.nz](http://www.nutritech.co.nz)



Animal Nutrition And Forage Advice That Works, Our Guarantee.

A PRODUCT MADE BY  
**LALLEMAND**



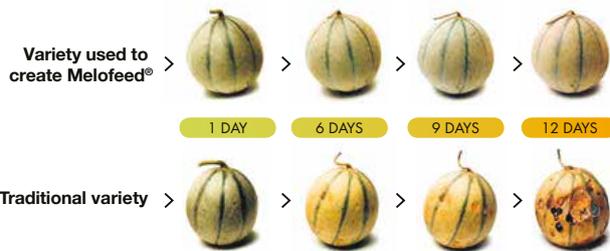
**NUTRITECH**  
LEADERS IN ANIMAL NUTRITION

# Melofeed® Next Generation Antioxidant



## What is Melofeed®?

A remarkable discovery was made when a certain type of melon was found that appeared less susceptible to cellular damage. Scientists have discovered that this variety is high in primary antioxidant enzymes (superoxide dismutase and catalase). Today this variety of melon has enzyme activity 20 times higher than a traditional variety - it effectively seems to resist ageing!



This melon variety is used to create Melofeed®, the concentrated primary antioxidant supplement that is now added to a range of Nutritech products. Melofeed® ensures your animals have a strong foundation of health to limit the negative effects of external and internal stressors.

**“Melofeed helps turn oxidative compounds to neutral substances - water and oxygen - to prevent cell damage”.**

Selenium helps catalyse (speed up) the antioxidant pathway, and therefore supplementation of **both** selenium and primary antioxidants such as Melofeed® is important.

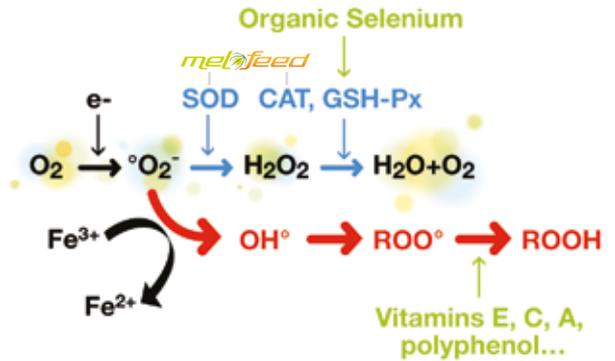
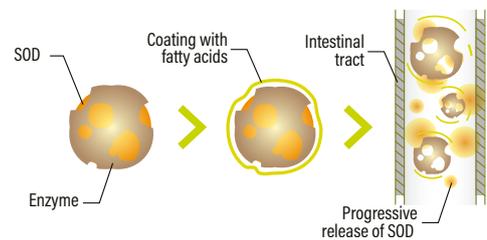


Image source: Lallemand.

SOD (superoxide dismutase) and CAT (catalase) are supplied in Melofeed® to prevent damaging O<sub>2</sub><sup>-</sup> converting into reactive oxygen species. Instead, these enzymes convert O<sub>2</sub><sup>-</sup> to water and oxygen. Selenium helps in this conversion. Vitamins help protect the cell if any O<sub>2</sub><sup>-</sup> is missed by SOD and is converted into damaging reactive oxygen species (ROO, ROOH)

**“Melofeed® has the latest technology to ensure it is released in the right part of the body”**

A special coating on the antioxidant (labelled below as fatty acids) provides double protection to prevent destruction by the acidity of the digestive tract and secure its resistance to stomach acid and high temperature. This allows the active enzymes to be released in the intestine where it is needed for absorption. At a cellular level, plasma enzyme activity of superoxide dismutase increased in piglets fed Melofeed® by 25-40%<sup>9</sup> which shows it is getting to where it needs to go.



The powerful antioxidant enzyme superoxide dismutase (SOD) is protected by a unique coating of fatty acids.

A PRODUCT MADE BY  
**LALLEMAND**



For more information on this subject call...  
Call 0800 REMEDY (736 339)  
[www.nutritech.co.nz](http://www.nutritech.co.nz)



**NUTRITECH**  
LEADERS IN ANIMAL NUTRITION



Animal Nutrition And Forage Advice That Works, Our Guarantee.

# Melofeed® Next Generation Antioxidant

## When should I feed Melofeed®, Next Generation Antioxidant?

1. At Parturition (calving, lambing, farrowing, foaling)
2. During high production or activity (peak lactation, rapid growth)
3. During times of stress (heat, transport, cold)

These periods generate higher levels of cellular damage as metabolic activity is greater.

For animals at parturition, this is further complicated by the fact that total anti-oxidant status and antioxidant enzyme activity decreases just prior to the onset of giving birth<sup>10</sup>, resulting in low levels of protection from cellular damage. In dairy cows, oxidative stress during the transition period may be a major underlying cause of inflammatory and immune dysfunction according to both in vivo and in vitro studies<sup>11</sup>. Therefore, it is important that a complete antioxidant supplementation regime is used (Melofeed®, selenium, vitamins and other trace elements).

**"Melofeed® is now included in the Nutrimin® Springer Cow Balancer range and Selamin®X for horses. Contact Nutritech to add Melofeed® to your next custom blend"**



## Lallemand Internal Trial Findings<sup>12</sup>

While it can be difficult to see the health of individual cells without a microscope, internal trial data has shown:

- **Cows:** Reduced somatic cell count in milk. Somatic cell count is a good indicator of immune function and health status of the cow.
- **Sows:** Reduction of immature piglets per litter and reduction of intra-litter birth weight heterogeneity.
- **Piglets:** Improved survival after challenge.
- **Poultry:** Improvement of hatchability at the beginning of the laying phase.
- **Horses:** Increase of blood cell resistance to hemolysis (KLR test). Improved horse resistance to intense physical exercise.

## References

1. Aruoma, O.I. (1998) *Journal of American Oil Chemists Society*, 75: 199
2. Basu, S., Eriksson, M., (2000). Vitamin E in relation to lipid peroxidation in experimental septic shock. *Prostaglandins, Leukotrienes and Essential Fatty Acids* 62, 195–199.
3. Turk, R., et al. (2017). Mastitis in dairy cows. *Mljekarstvo*, 67 (2), 91-101
4. Segerson, E. C., and Ganapathy S.N., (1980). Fertilization of ova in selenium-vitamin E-treated ewes maintained on two planes of nutrition. *Journal of Animal Science*. 51: 386.
5. Segerson, E. C., et al., (1977). Seleniunhitamin E: role in fertilization of bovine ova. *Journal of Dairy Science*. 60: 1001
6. Art, T et al., (1999). Indices of oxidative stress in blood and pulmonary epithelium lining fluid in horses suffering from recurrent airway obstruction. *Equine Veterinary Journal*, 31, 397–401.
7. Bendich, A., (1993). Physiological role of antioxidants in the immune system. *Journal of Dairy Science* 76, 2789–2794.
8. Sordillo (2009). Impact of oxidative stress on the health and immune function of dairy cattle. *Veterinary Immunology and Immunopathology* 128: 104–109
9. Lallès et al., (2011): A melon pulp concentrate rich in superoxide dismutase reduces stress proteins along the gastrointestinal tract of pigs. *Nutrition*, 27: 358-363
10. Adela et al., (2006). Antioxidant status in dairy cows during lactation. *Bulletin USAMV-CN*, 63/2006 (130-135), ISSN 1454-2382
11. Sordillo (2009). Impact of oxidative stress on the health and immune function of dairy cattle. *Veterinary Immunology and Immunopathology* 128: 104–109
12. Lallemand Internal Trial Data, 2013

A PRODUCT MADE BY  
**LALLEMAND**



For more information on this subject call...  
Call 0800 REMEDY (736 339)  
[www.nutritech.co.nz](http://www.nutritech.co.nz)



**NUTRITECH**  
LEADERS IN ANIMAL NUTRITION

Animal Nutrition And Forage Advice That Works, Our Guarantee.