



# Feed Additives

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## Antioxidants



- Oxygen occurs oxidation and decomposition of feed ingredients such as animal fat and oil especially unsaturated fatty acids, fishmeal and vitamin A and carotene, which may cause lack of protein and energy or feed taste and quality deterioration.



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## Antioxidants

- Oxidation is much important especially in plant origin feeds that are rich in unsaturated fatty acids.
- Temperature and heavy metals have an important role for the oxidation. Especially Fe shows an catalizor effect in oxidation.
- Storage, mixing and transportation of feeds and contact with metals also accelerate the oxidation.



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## Antioxidants

- Grains can be stored 1 or more years without oxidation whereas ground feeds can not. WHY?
  1. Processed grains lose their protective layer and their particulate surface which contacts with air enlarges
  2. During the process, feed particles contact with heavy metals
  3. Heat, light and O<sub>2</sub> accelerate the reaction



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## Antioxidants



- An antioxidant is a molecule capable of inhibiting the oxidation of other molecules.



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## Antioxidants

- In nature there are thousands of compounds possessing antioxidant properties.
- There are both fat-soluble (vitamin E and carotenoids, etc.)
- water-soluble (ascorbic acid, glutathione, bilirubin, etc.)
- they can be synthesised in the body (ascorbic acid, glutathione)
- or are delivered with feed (vitamin E, carotenoids, Se etc.).

*The importance of antioxidants in poultry (PDF Download Available).* Available from:  
<https://www.researchgate.net/publication/236669474> *The importance of antioxidants in poultry* [accessed Oct 22 2017].



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## Antioxidants

- There are 2 antioxidants that are classified as natural and synthetic.
  1. Natural: It is in feedstuffs as a natural. Tokoferol (Vitamin E), Ascorbic acid (Vitamin C)
  2. Synthetic: BHA, BHT, EQ, Vitamin E, Ascorbic acid and Gallic acid

