What is selenium?

Selenium is an essential trace mineral for animals and people. It acts as a powerful antioxidant and plays a critical role in metabolism, growth, reproductive health and the body’s natural defenses. It also optimizes the immune system of animals during periods of increased demand. Securing the immune system naturally leads to improved performance, as animals waste less energy fighting disease.

Most of the world’s agricultural areas are in regions where feed and forages have suboptimal selenium levels. Selenium deficiency is related to various diseases in animals and humans, along with decreased productive and reproductive performance in livestock. Hence, meeting animals’ selenium requirements is one of the key factors in production efficiency.

Selenium form drives efficiency

Evidence from the last 20 years indicates that the form of dietary selenium is key to its efficiency. This has led to an industry shift toward safer organic forms and a movement away from sodium selenite, the traditional form of selenium supplementation.

Selenite’s high toxicity, negative interactions with other minerals, possible contamination with heavy metals, and lack of traceability and safety have caused the industry to question its use.

It’s time to reevaluate the form of selenium that goes into food-animal diets, human diets and our environment. The selenium from Sel-Plex is safer and is better able to meet the higher requirements of modern livestock raised for rapid growth, reproductive performance and health.

SEL-PLEX® – Alltech’s proprietary form of selenium yeast.

Sel-Plex is Alltech’s proprietary organic form of selenium yeast. It is an excellent dietary source of selenium and is manufactured to mimic Mother Nature—that is, the selenium in Sel-Plex is in the same form that is found naturally in plants.

Research shows that optimizing selenium nutrition in the diets of food animals increases the efficiency of egg, meat and milk production. More importantly, it improves the quality and nutritive value of these products. Sel-Plex delivers a superior source of selenium with the benefits of antioxidants.
**BENEFITS OF SEL-PLEX®**

Why SEL-PLEX®?

- **PROVEN**
  Sel-Plex is the first FDA reviewed organic selenium yeast, and was the first-strain specific form to be EU-approved in all species.

- **TRACEABLE**
  - Sel-Plex is manufactured, packaged and sold by Alltech using highly controlled manufacturing processes and quality control methods.
  
  - By applying molecular identification checks, we can track its presence in feed. You will always know where your organic selenium source comes from.

- **SAFE**
  Supported by more than 29 years of research, Sel-Plex is the most researched and proven form of organic selenium.

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**BENEFITS FOR POULTRY**

### BREEDER AND LAYER

Selenium supplementation is linked to:
- Supported breeder fertility
- Optimized selenium status of the:
  - Egg
  - Embryo
  - Newly hatched chick
- Better hatchability
- Better chick viability
- Optimized egg quality

### BROILER

Selenium supplementation is linked to:
- Supported feed–to–gain ratio (-5.3 points)
- Optimized bird health
- Supported robust feathering
- Optimized meat quality

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**Table 1: Effect of dietary selenium source (0.3 ppm) on the performance of broiler breeder females**

<table>
<thead>
<tr>
<th>Diet</th>
<th>Hatchability (%)</th>
<th>Hatch of fertile eggs (%)</th>
<th>Chick production (no.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>77.9</td>
<td>88.6³</td>
<td>131.3³</td>
</tr>
<tr>
<td>Selenite</td>
<td>82.5</td>
<td>91.5⁴</td>
<td>139.1⁴</td>
</tr>
<tr>
<td>Organic Se (Sel-Plex)</td>
<td>83.5</td>
<td>92.5⁴</td>
<td>145.3⁴</td>
</tr>
</tbody>
</table>

Renema, 2004

³ ⁴ Values with different superscripts differ (P<0.05)

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**Figure 1: Effect of selenium supplementation (inorganic vs. organic; Sel-Plex) on broiler productivity**

1 Sel-Plex selenium-enriched yeast

Edens and Gowdy (2003), Arruda et al. (2002), Anciun et al. (2004), Chact et al. (2004), Bonaspetti (personal communication, 2005)
**BIOAVAILABILITY**
- The selenium in Sel-Plex is better absorbed, stored and utilized by the animal than inorganic selenium, helping to boost the body’s defense system.
- Improved selenium tissue retention means that less selenium is excreted than when livestock are supplemented with sodium selenite or selenate.
- Sel-Plex is environmentally friendly due to lower excretion levels.

**COMPLETE**
Sel-Plex is designed to completely replace all inorganic and organic selenium sources in the diet.

**BENEFITS FOR SWINE**

**SOW AND PIGLETS**
Selenium supplementation is linked to:
- Supported reproductive performance
- Supported selenium transfer to:
  - Colostrum and milk
  - Placenta, resulting in higher selenium status and tissue reserves in piglets
- Viability in piglets
- More piglets weaned per sow per year
- Optimized piglet growth rates

![Figure 2: Influence of selenium source (inorganic vs. organic; Sel-Plex) in sow and nursery diets on the rate of mortality and morbidity (N = 1000 piglets).](image)

- SCC was reduced in the organic selenium (Sel-Plex) group by 30% while the inorganic control group was reduced by 7.6%

**GROWER FINISHER PIG**
Selenium supplementation is linked to:
- Supported selenium retention in muscle and tissue
- Supported health status
- Optimized meat quality (e.g., Loins color and drip loss)

![Figure 3: Effect of selenium source (inorganic vs. organic; Sel-Plex) on pork meat quality (drip loss).](image)

**FERTILITY**
Selenium supplementation is linked to:
- Reduced incidences of retained placenta
- Better conception rates (i.e., first service)
- Reduced number of open days
- Optimized meat quality
- Supported selenium transfer into muscle tissue
- Optimized antioxidant status

![Figure 4: Effect of selenium source on the SCC (somatic cell count) in milk of dairy cows.](image)

- Effect of organic selenium on immune support = 80% compared to the control

**COMPLETE**
Sel-Plex is designed to completely replace all inorganic and organic selenium sources in the diet.

**BENEFITS FOR RUMINANTS**

**FERTILITY**
Selenium supplementation is linked to:
- Reduced incidences of retained placenta
- Better conception rates (i.e., first service)
- Reduced number of open days
- Optimized meat quality
- Supported selenium transfer into muscle tissue
- Optimized antioxidant status

![Figure 4: Effect of selenium source on the SCC (somatic cell count) in milk of dairy cows.](image)

- Effect of organic selenium on immune support = 80% compared to the control

**COMPLETE**
Sel-Plex is designed to completely replace all inorganic and organic selenium sources in the diet.
THE WORLD’S LEADING EXPERTS
AND PRODUCERS OF ORGANIC SELENIUM.

Research into total replacement started more than 10 years ago, when Alltech demonstrated that all inorganic trace minerals could be removed from the animal’s diet and be replaced with only organic trace minerals in the form of Sel-Plex and Bioplex. We call this innovation Total Replacement Technology (TRT™).

To ensure maximum mineral bioavailability, organic minerals have been developed in the form of Bioplex using chelation technology. Bioplex trace minerals are presented to the animal in a way that is comparable with their natural organic state in plants.

Sel-Plex is the proprietary selenium-enriched yeast from Alltech and is designed to mimic Mother Nature. It is better absorbed and utilized by the animal than inorganic selenium.

Alltech® Q+™
Quality, Confidence, Safety

ALLTECH Q+™ is the quality control program unique to our range of organic trace minerals. It forms an integral part of the ALLTECH QUALITY SYSTEM (AQS). This program assures that proper approvals and analyses are performed for suppliers, raw materials and finished goods.