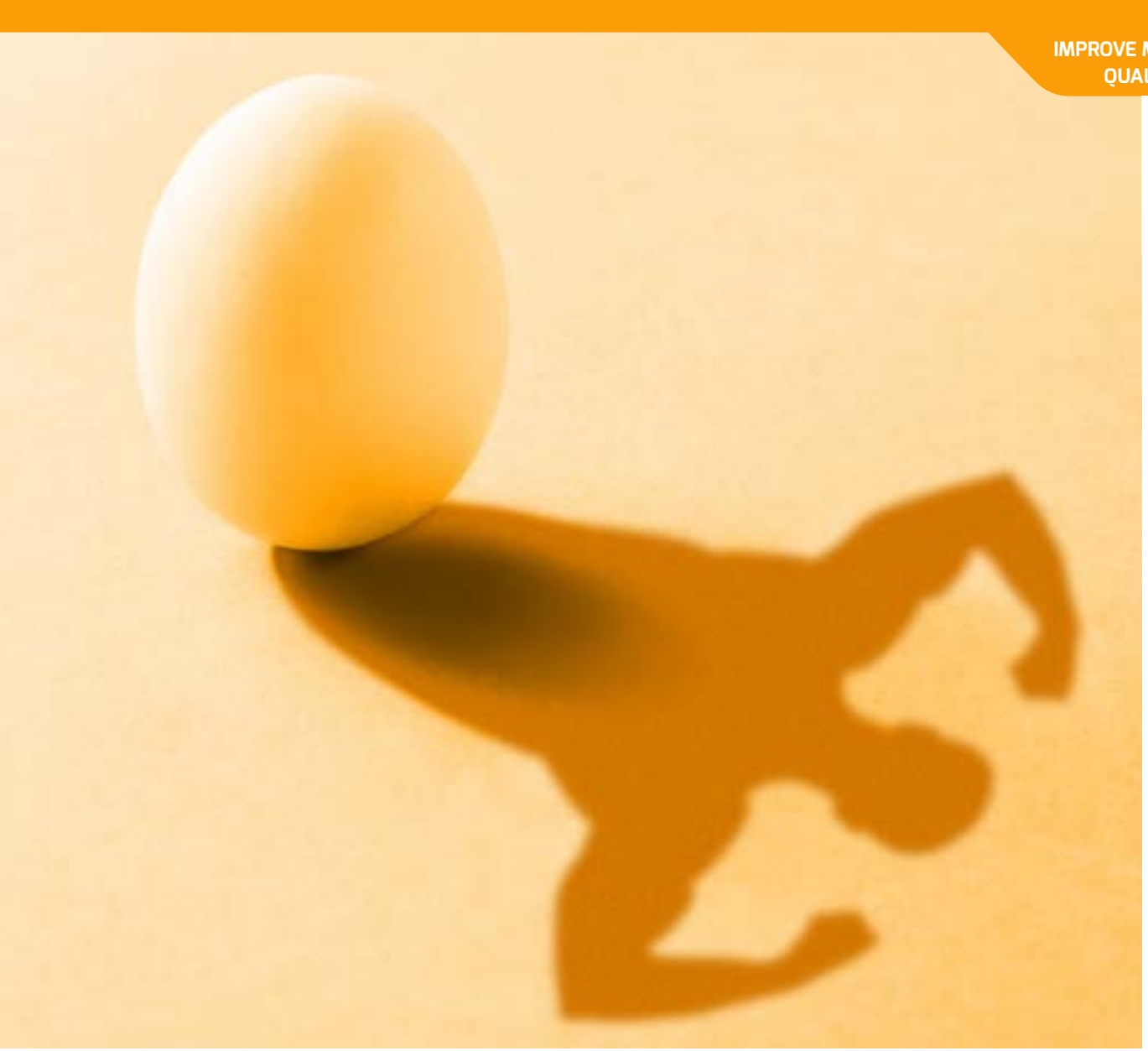


Selenium enriched eggs

A balanced diet is of key importance for the promotion of human health. Among the essential nutrients, Selenium has been shown to be deficient in many countries throughout the world. A Selenium deficiency, in animals as well as in humans, is associated with a compromised immunity system and an increased susceptibility to various viral and bacterial diseases. The production of Se-enriched eggs is an effective approach to limit a Selenium deficiency in humans.

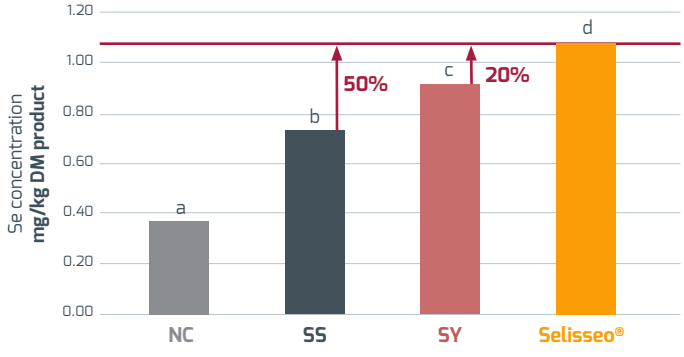
SELENIUM IN EGGS

Selenium deposition in eggs

Selenium (Se) is an essential nutrient and antioxidant that participates in protective metabolic processes against lipid, protein and DNA oxidation.

The source and level of Se in laying hen diets has an impact on the Se content of eggs. When organic selenium is fed to laying hens, in the form of hydroxy-selenomethionine (100% OH-SeMet, Selisseo®), the level of Se in the eggs increases significantly. The transfer of selenium to the eggs is higher for Selisseo® than for Sodium Selenite (+50%) or Seleno-Yeast (+20%) [1] (Figure 1).

Figure 1 - Whole egg Se concentration[1]



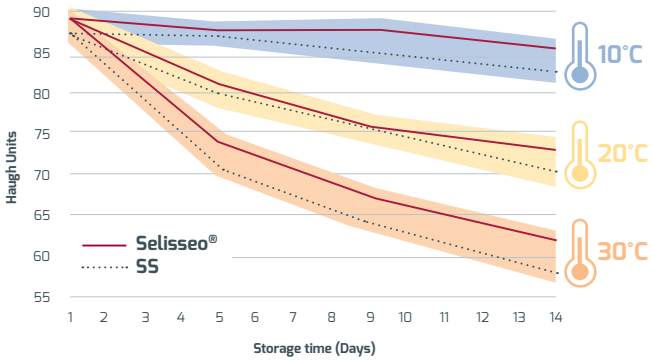
NC: Negative control
SS: Sodium selenite (0.2 mg Se/kg of diet)
SY: Seleno-Yeast(0.2 mg Se/kg of diet)
Selisseo® (0.2 mg Se/kg of diet)

Interest for the final consumers

Selisseo® preserves and prolongs the freshness quality (Haugh unit) of eggs during their storage and commercialization (Figure 2 and 3).

Figure 2 - Effect of dietary Selenium (0.3 ppm) on egg freshness[2]

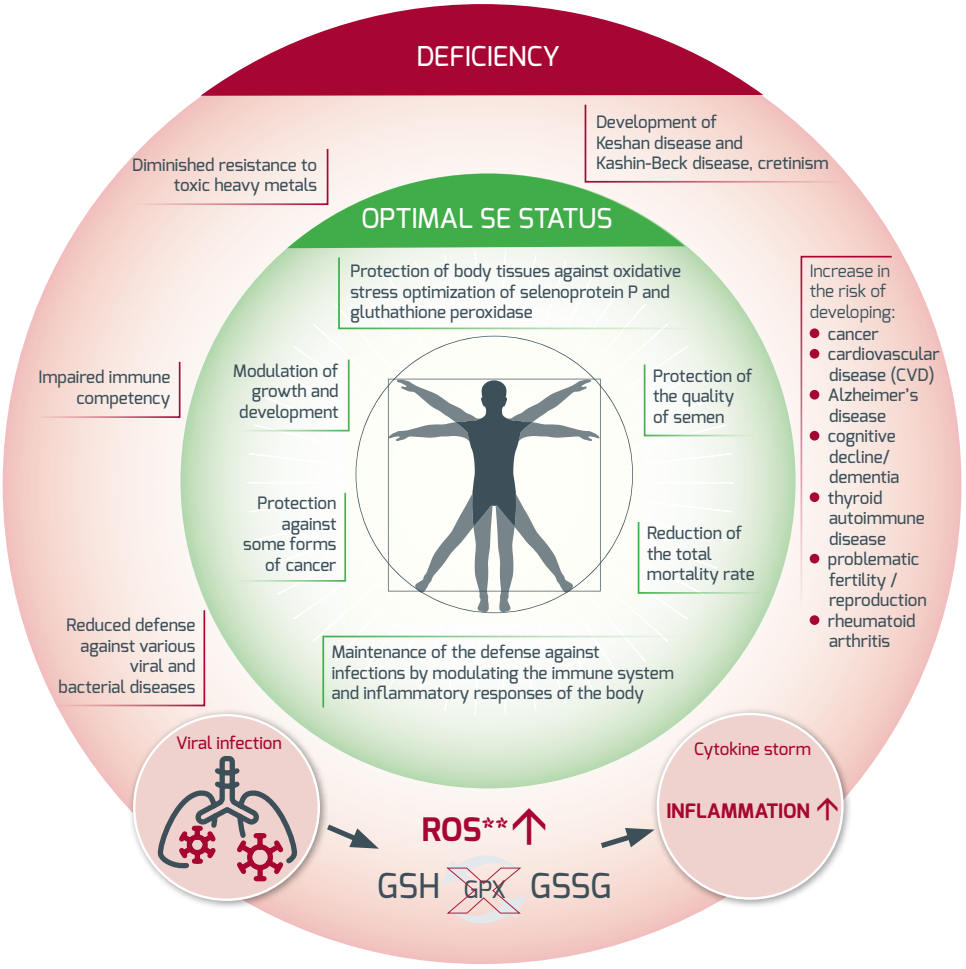
Figure 3 - Effect of dietary Selenium on egg freshness during storage[3]



SELENIUM IN HUMANS

Selenium is an essential element for humans in order for them to have adequate bodily functions. Selenium is important for their immunity and antioxidant defenses to protect the body from stressors (Figure 4). An adequate intake (AI)* of Selenium for human adults is 70 µg of Se per day. It has been demonstrated that an adequate intake of Selenium protects the body against viral and bacterial diseases.

Figure 4 - Selenium status and human health



Feeding laying hens diets with 0.3 ppm Se as Selisseo® enriches the eggs to approximately **30-32 µg Se per egg** (cf ≈ 10 to 15 µg Se/egg for ordinary eggs). Thus, eating **2 Se-enriched eggs** a day can meet **91% of the recommended daily Se intake.**

Eggs are also rich in other key nutrients. including Vitamin B12, Vitamin D, phosphorus ...

	Se Content (µg Se/egg)	% AI* requirements met by eating 2 eggs per day
Ordinary egg	10-15	29-43
Se-enriched egg 0.2 (Selisseo® 0.2%)	22-25	63-71
Se-enriched egg 0.3 (Selisseo® 0.3%)	30-32	86-91

And that's not all... Selisseo® also offers economic benefits

Maintained egg production in aging flocks
+ 4 eggs/hen cf SS
+2 eggs/hen cf SY[4]

Better feed efficiency
-3% cf SS
-1.6% cf SY[4]

Better egg quality
e.g. improved eggshell thickness: **+2.6%**
and eggshell strength: **+7.9%** cf SS[5]
fewer downgraded eggs

High-value end products with free of charge investments for the producer

- A 'Selenium-enriched egg' stamp and health claims, when permitted by the regulations
- The Se level, and comparison with the Recommanded Dietary Allowance mentioned on the label

Selisseo® helps to fight oxidative stress and supports immunity

It is the only hydroxy-selenomethionine on the market that is able to fully deliver the benefits of organic selenium to obtain enhanced stress resistance and immunity, promote a high egg production, in particular in aging layers, improve egg quality and enrich the Se in eggs. Se-enriched eggs could be an effective strategy to deal with an Se deficiency in the human diet, which leads to an increased susceptibility to viral and bacterial diseases.

All the results reported in this document have been extracted from trials in which Selisseo® was compared with other sources of selenium. They should be considered as examples demonstrating the effect of Selisseo®.

[1]Jlali et al., 2013, Journal of Animal Science, 91(4), 1745-1752
[2]Trial conducted in Thailand, 2015
[3]Field trial conducted in Spain, 2019
[4]Trial conducted in the USA, at the University of Georgia ,2019
[5]Trial conducted in Brazil, at the University of Sao Paulo, 2016

*AI = Adequate intake (EFSA Journal 2014;12(10):3846)
**ROS: Reactive oxygen species
GPx: Glutathione peroxidase
GSH: Reduced glutathione
GSSG: Oxidized glutathione