



## → Powerful Nanotechnology driving chicken immune system

NanoSel E™ is a proprietary formulation containing emulsified tocopherol acetate and suspension of ascorbic acid coated selenium nanoparticles in equimolar concentration.

### Composition

#### Each ml contains:

Vitamin E (Tocopherol acetate) emulsion .....	100 mg
Selenium Nanoparticles (< 100 nm).....	1 mg
Vitamin C coated (Ascorbic acid) .....	1 mg
Aqueous base.....	Q.S.



### Why is NanoSel E™ unique in its class ?

Invati and nanotechnology are inseparable. We have developed proprietary nutrient coated nanoparticle synthesis technology. NanoSel E™ is the result of such technology where ascorbic acid (vitamin C) is coated on selenium nanoparticles (NPs) in equimolar concentration as clear suspension. The particle size of selenium NPs achieved, as detected by dynamic light scattering (DLS), is in the range 10 – 100 nm. Additionally, NanoSel E™ contains stable emulsion of tocopherol acetate that adds synergy to the biological activity of ascorbic acid (vitamin C) coated selenium NPs.



### How does NanoSel E™ stack up with the competition ?

Parameters	Competition	NanoSel E™	
Physical form	Mostly powder, few liquid products available	Stable liquid form	
Chemistry of ingredients	<p>→ Vitamin E as tocopherol acetate is oily in nature and is prone to poor dispersion in water application.</p> <p>→ Inorganic selenium salts are soluble in water and gets separated from the formulation when applied in water.</p> <p>→ Few products have vitamin C blended in the formulation.</p>	<p>→ Vitamin E as tocopherol acetate is a stable emulsion that ensures uniform dispersion in water application.</p> <p>→ Selenium as zerovalent NPs have large surface area, higher catalytic efficiency, and higher biological activity.</p> <p>→ Vitamin C is coated on selenium NPs, making it a nanoscaled entity.</p>	
	Bioavailability	Poor dispersion of vitamin E and inorganic selenium salts result in unwanted interactions in chicken gut culminating in poor bioavailability.	Selenium NPs with coated vitamin C have highest bioavailability than any other forms. The stable emulsion of vitamin E ensures uniform dispersion in water.



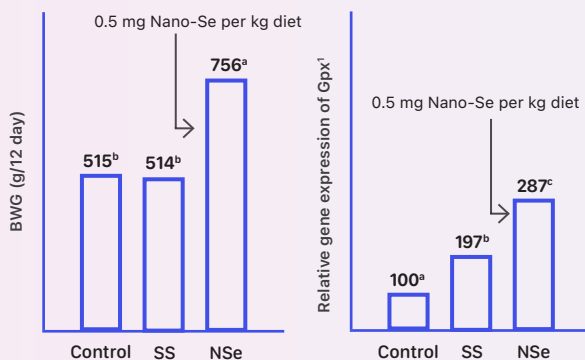


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Selenium nanoparticles in NanoSel E™ have been proven to improve growth indices, immune parameters, egg and meat quality in commercial layers and broiler, respectively.

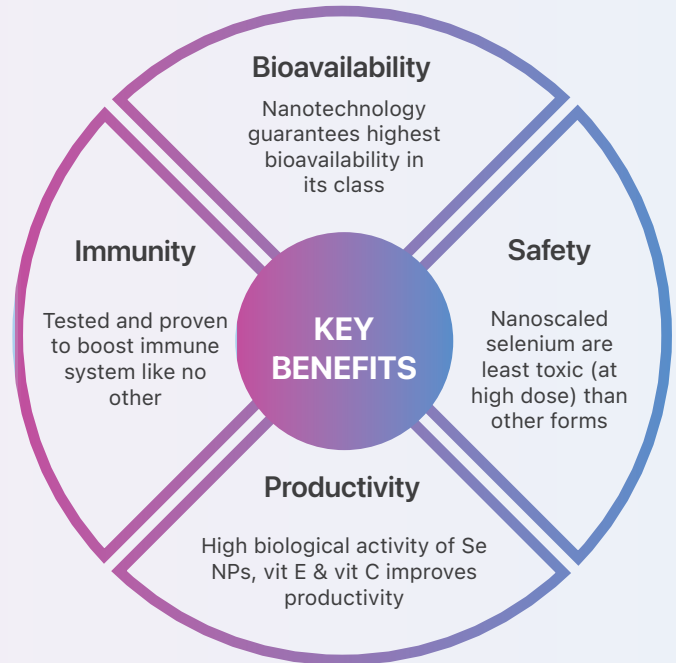
### Research reviews

#### Controlled trial of Nano-selenium in broilers

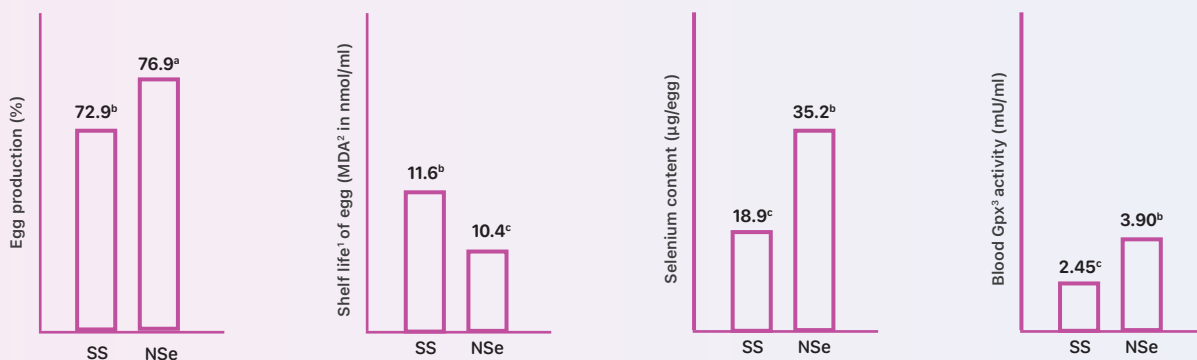


Thirty broiler chicks at 15 days old were randomly divided into three dietary treatments, namely **Control** (basal diet without any supplementation with selenium); **SS** (basal diet + 1 mg sodium selenite/kg diet); and **NSe** (basal diet + 0.5 mg Nano-Se/kg diet). The birds were given the experimental diets from 15 to 27 days old. (Source: Saleh and Ebeid, 2019)

<sup>1</sup>Glutathione peroxidase



#### Controlled trial of Nano-selenium in commercial layers (32 – 45W)



One hundred and eighty silver Montazah laying hens (Egyptian local developed strain) aged 32 weeks were housed in individual cages in a semi-open house. Birds were divided randomly into treatments and fed a basal diet (vitamins and minerals mixture without Se). The experiment involved two sources of selenium viz, **SS** (sodium selenite) and **NSe** (Selenium nanoparticles) fed at **0.25 ppm** till 45 weeks age. (Source: Radwan et al., 2015)

<sup>1</sup>Stored eggs after 15 days of laying at 16 °C with 65% relative humidity; <sup>2</sup>Malondialdehyde; <sup>3</sup>Glutathione peroxidase

### Instructions for use

- Chicks/Growers/Layers.....1 ml per 40 birds in drinking water
- Broilers.....1 ml per 10 birds in drinking water

(Or as recommended by veterinarian)

