



Synergentis
Synergy Through Innovation

Super D

Super D is a fine free flowing beadlet powder of 25 hydroxy vitamin D3.

Why Choose Us?

- ✓ Cost Effective
- ✓ Highly Efficacious Formulation
- ✓ Supporting Farmers & Healthy Animals



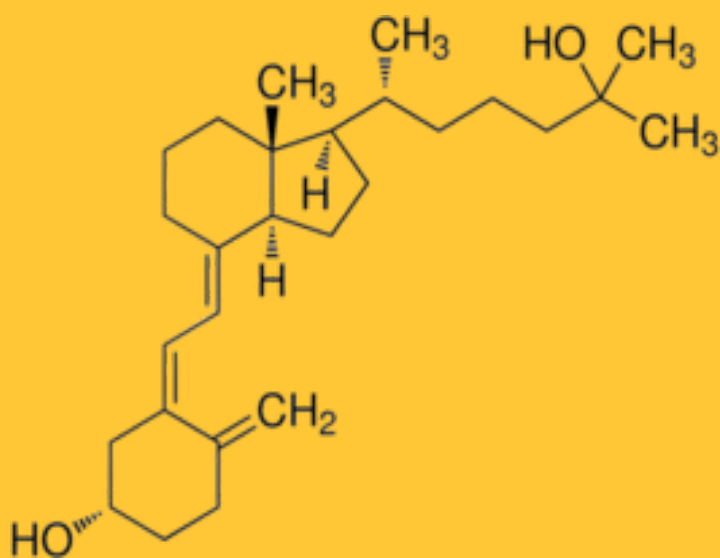
Happy Hens. Healthy You.

Product identification:

CAS Number: 63283-36-3

Chemical Name: (3 β , 5Z, 7E)-9,10-secocholesta-5,7,10(19)-triene-3,25-diol monohydrate

Empirical formula: C₂₇H₄₄O₂.H₂O



Specifications

Appearance: Free flowing powder

Colour: Off White

Fineness : 90% min. through 80 mesh sieves

Loss on drying: : 5% max. (1g at 105 degrees Celsius for 2hrs)

25 hydroxy VD3 content : 1.25 or 3.75% min.



Application

For animal nutrition in premixes, compound feeds and liquid diets.

Stability and Storage

25 hydroxy D3 is sensitive to air, heat, light and humidity. The product may be stored for 24 months from date of manufacture in the unopened original container and at a temperature $<25^{\circ}\text{C}$. Once opened use contents quickly.

Directions for use:

Ingredients: Modified starch, maltodextrins, anti-caking agent, 25-hydroxyvitamin D3.

For use as a vitamin in animal nutrition. Not for direct addition to completed feeds. For premixes only.

For layer, layer breeder, broiler, and broiler breeder supplementation

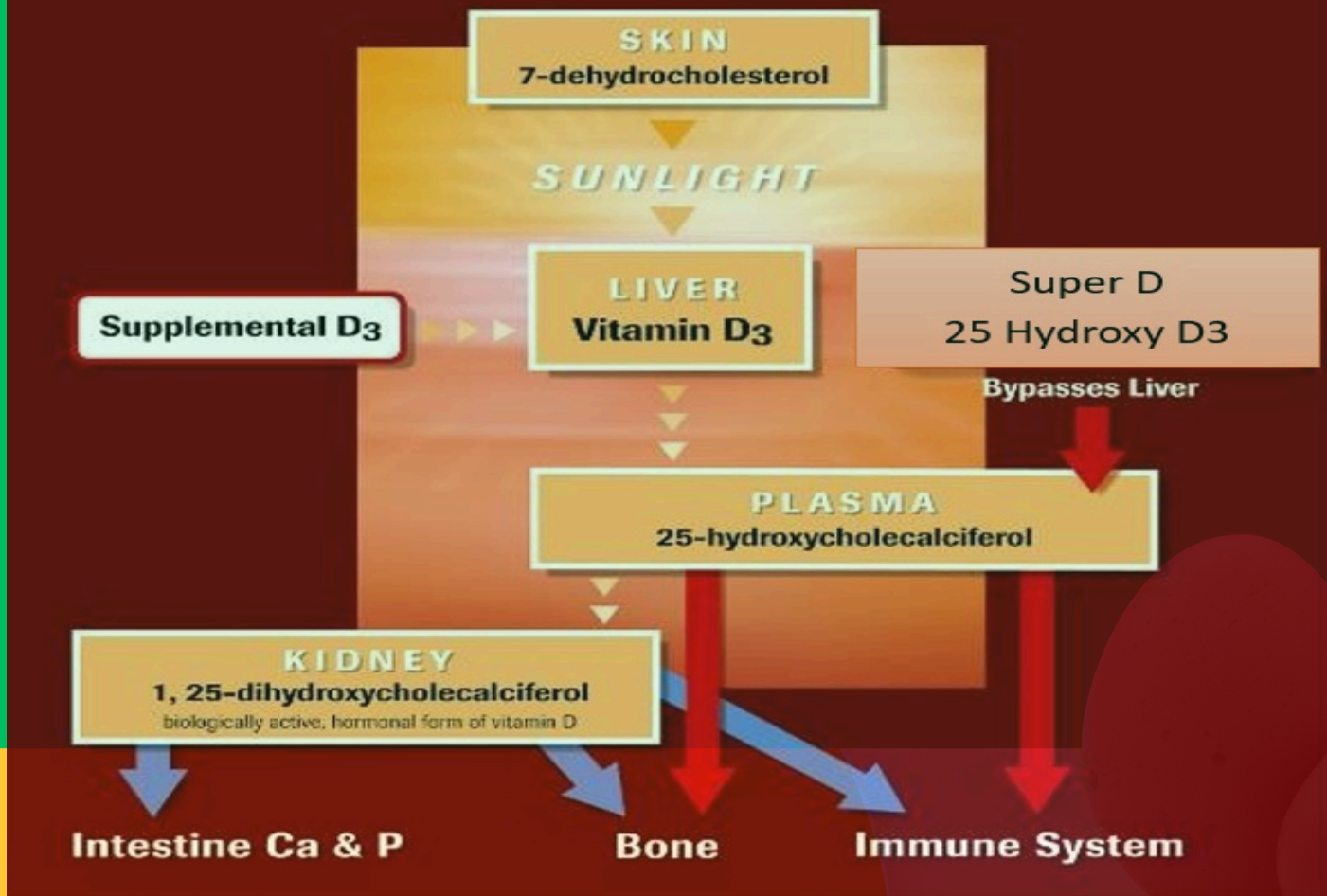
- First make premix with rice hull contains 25-OH VD3 62.5mg/MT, second, add 1/2 kg of premix into one MT of feed to make the final feed of 69.3 ug/kg.

For turkeys and turkey breeder supplementation

- First make premix with rice hull contains 25-OH VD3 83.3mg/MT, second, add 1/2 kg of premix into one MT of feed to get the final feed of 92.4 ug/kg.



Vitamin D Metabolism



Mode of Action

- **Normal Ca:P Ratio:** When blood levels of calcium and phosphorus are optimal, 25-OH D₃ maintains or increases the deposition of these minerals in structural bone.
- **Abnormal Ca:P Ratio:** When blood levels of calcium are low (hypocalcaemia), 25-OH D₃ is converted in the kidney to 1,25-(OH)₂-D₃. This compound improves the absorption of calcium and phosphorus from the intestine, as well as the remodelling of structural bone.
- **Direct Cellular Effects:** 25-OH D₃ acts on vitamin D receptors (VDRs) located on the cell membranes of various cell types to elicit specific functions, including:
 - Bone-building cells (osteocytes)
 - Muscle satellite cells
 - Innate immune cells
 - Cancer prevention

Super D acts beyond the classical functions of Vitamin D₃

Advantages of Super D

Stability and Bioavailability

Super D Patented Formulation:

- **Beta-cyclodextrin entrapment:** Protected at the molecular level, up to 5 wt% (much higher than the alternative limits of 1.25 wt%).
- **Beadlet:** Diluted to 1.25 wt% powder, with longer shelf life at ambient temperature (no antioxidants required).
- **Premix:** Blended with rice hull, CaCO_3 , and mineral oil for enhanced stability.
- **Feed Pelleting:** Remains stable.
- **Bioavailability:** Strong acid stability in chicken gizzards; high water solubility and enzymatic digestibility in the small intestine with effective release.

New Water-Soluble Powder Formulation:

Truly water-soluble (not just water-dispersible like existing products on the market), stable in water for weeks, unaffected by other additives, and provides enhanced bioavailability.



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Synergentis Pty Ltd

Brisbane

Australia

www.synergentis.com

Legal

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Challenges of Alternate 25(OH)D3 Formulations

Product Stability and Bioavailability

Technical Grade: 25-hydroxy VD3 monohydrate is unstable, difficult to dissolve in water, and in final feed only 50–100 mg/ton of feed remains. Requires thorough mixing!

- Beadlet (Microencapsulation): Dilution to 1.25 wt% powder only; shorter shelf life, unstable stability; EMQ and BHT required for stabilisation; cold room storage needed.
- Premix: Blended with rice hull, CaCO_3 , and mineral oil. Stability affected by UV, oxygen and metal degradation.
- Feed Pelleting: Up to 90°C, high moisture and heat causes instability.
- Bioavailability: Needs protection from degradation in chicken gizzards (strong acid); absorption in the small intestine can be limited for oil droplets.

Microencapsulation of alternate 25(OH)D3 formulations

