PoultryBusiness

PLANT-BASED VITAMIN D IMPROVES CALCIUM UTILISATION

Replacement of oyster shell supplementation for broiler breeders. By John Hodgkinson, production director Lohmann GB, broiler breeder division


John Hodgkinson

It was a pleasure to work with Wyreside to complete some factual evidence on the use of an alternative source of feed additive to support eggshell strength which affects utilisation and hatchability from approximately 45 weeks of the flock.

On farm, there was a notable difference with shell quality and the results suggest that there has been a difference in shell wall thickening. On the evidence achieved I will be using this strategy in future flocks.

Eggshell quality is a concern in all egg producing birds. As calcium absorption is reduced with the age of the hen, also calcium that is available to produce a strong eggshell is lowered. Usually, the calcium level in layer diets is increased with age, to compensate for this effect.

Alternatively, in aviary systems, coarse limestone or oyster shell can be supplied as a separate calcium source on top of the normal diet to increase calcium supply. The advantage of the latter approach is that hens can ingest calcium according to their individual requirements.

However, research has showed that the real cause for the reduced calcium absorption with hen age is that old hens are no longer able to activate vitamin D into its bio-active form as efficiently as hens around peak production.

Supplying extra calcium to ageing laying hens is therefore not the most efficient way to improve eggshell strength, as a major part of this extra calcium will not be absorbed from the intestines and is directly excreted in the faeces.

In contrast, supplying Panbonis as a source of the bio-active form of vitamin D, directly stimulates calcium absorption from the intestines and the calcium balance in the hen. It does not need activation in liver and or kidney, like other vitamin D source or vitamin D metabolites do. As a result, the hen can absorb enough calcium from the intestines independent of age.

To show this benefit of Panbonis in broiler breeders, we compared the current management system in a trial in the UK, where 20g oyster shell per kg diet was supplied separately to the breeder hens on top of the diet, with an alternative system, where Panbonis was added at an inclusion level of 100 g/t and oyster shell was no longer supplemented. At the start of the trial, breeder hens were 50 weeks of age. The trial lasted until 60 weeks of age.

Ross 308 broiler breeders were housed in two similar test barns, each with about 22,000 hens. A commercial type II diet was fed to all hens during the 10-week test period.

This diet contained 30g per kg calcium, 0,35% available phosphorus and 3'200 IU per kg vitamin D. In one barn, additional oyster shell was given (20g per kg diet) and in the other barn 100g Panbonis per kg diet was supplied instead. 100 eggs were collected per barn before trial start (week 49) and four times until trial end and submitted to Nottingham Trent University.

Eggshell thickness was measured as palisade height by 5.6 points as illustrated in table 1 (see

Figure 1: Hen day production curve (%) of the control (20 kg/t oyster shell on top) and test barn (diet supplemented with 100 g/t Panbonis)

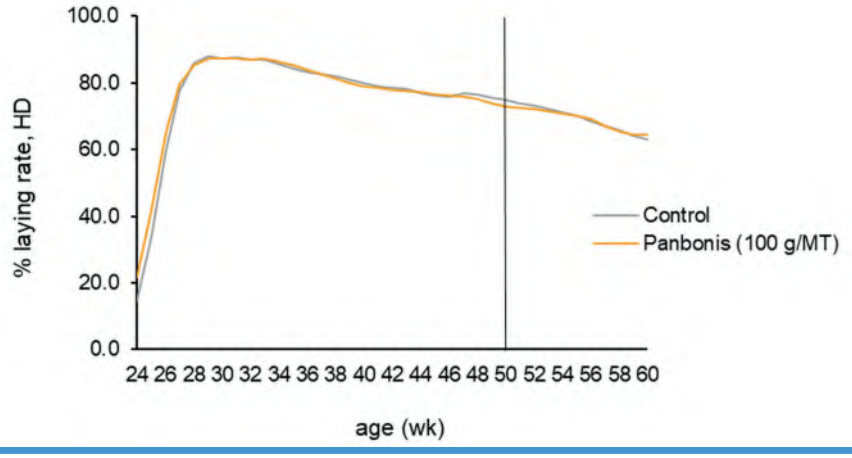
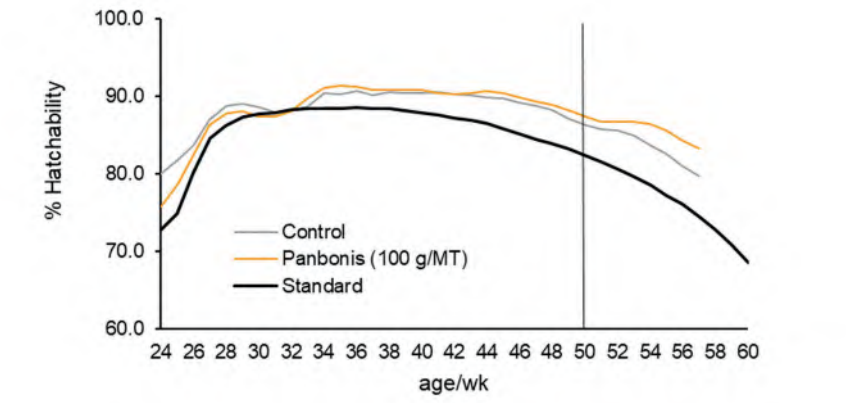


Figure 2: The hatchability curve of eggs produced by breeder hens where oyster shell was added on top (control, 20 kg/t of feed) or Panbonis was used instead (100 g/t). The sold black line represents the breeder reference curve



page 12). Palisade height is more or less equal to eggshell thickness (eggshell thickness is egg membrane, palisade and cuticle).

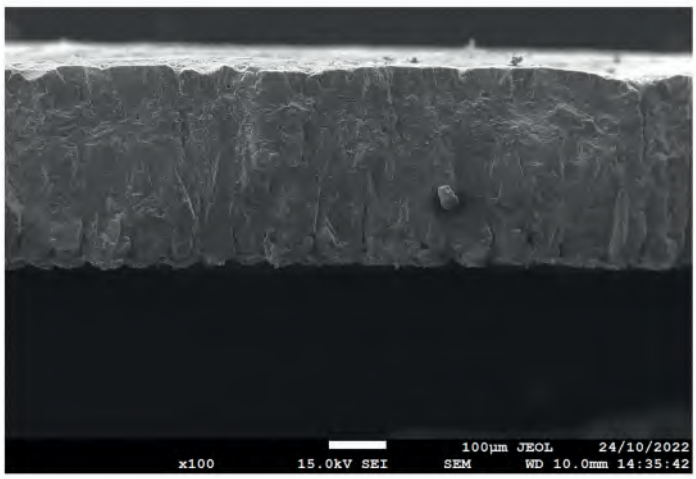
Laying rate and settable eggs were not affected during the 10-week trial period, being on average 69.3% and 97.1% in both barns. The egg production curves are shown in Figure 1. Hatchability was similar in both barns before trial start, being 88.8% for the control and 88.9% for the test barn.

During the following test period, the hatchability was on average 2.2% higher in the test barn where Panbonis was fed, compared to the control barn where oyster shell was used (figure 2). From 50 to 60 weeks of age, hatchability was on average 83.6% in the control barn, and 85.8% in the test barn.

A simple calculation shows that based on 22,000 hens per barn, Panbonis gave 325 extra hatching eggs per day during the 10-week test period from 50 to 60 weeks of age. These farm data were confirmed by the hatchery that showed a higher saleable hatch of 84.0% in the Panbonis barn over 81.4% in the control barn. This difference shows that Panbonis can effectively replace oyster shell supplementation in the late laying phase of breeding hens. Naturally, the standard diet must contain coarse limestone, to ensure that calcium is continuously present in the intestines.

Egg shell thickness measured as palisade height by electron microsopy

Palisade height (µm)	Control	Panbonis®
Base (week 49)	248.4 + 33.5	252.1 + 34.9
End (week 60)	242.7 + 21.9	248.3 + 23.8
Change	-5.7	-3.8



Dr Jan Dirk Van der Klis, head of global R&D and technical services, said: "When using Panbonis, also higher yolk weights were shown, whereas eggshell thickness was reduced less between 50 and 60 weeks of age compared to the control hens.

"These higher yolk weights in the Panbonis barn were supported by results in a recent Brazilian trial, where dietary Panbonis supplementation at 100 g/t increased one-day-old chick weight from 43.0 to 43.9 g in 45-weeks old broiler breeders."

The return on investment was 5.7. This value did not include savings on oyster shell.

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The unique, safe, and natural source of the bioactive form of vitamin D_3

Naturally essential in modern nutrition.

Panbonis® does not need activation in liver or kidney, hence higher bioavailability.

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+ **Supports bone integrity** (locomotion)
+ **Improves fertility**
+ **More chicks per hen**
+ **Supports immune system**

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