

Egg binding and soft egg shells in hens and renal disease in males (calcium and Vitamin D3 related)

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² and Al Dam²

Species

Egg binding (hens have difficulty passing an egg) and soft shelled eggs are common problems in hens of all domestic and captive bird species. Osteoporosis (fragile, brittle bones) is an important welfare concern for older layers. These conditions are common in high-producing birds fed "home-formulated" diets and osteoporosis also occurs frequently in well-fed commercial egg-laying chickens.

Status in Canada

This is a very common condition in laying hens.

Etiology

The modern strains of laying hen are able to produce well over 200 eggs in a laying period. Older, more traditional dual-purpose strains of chicken produce fewer eggs a year. Every egg produced has an egg shell made mainly of calcium carbonate. Every egg shell formed requires approximately 1.7 grams of calcium, creating an enormous calcium demand for a high producing laying hen. This amount of calcium (i.e. 1.7 grams) is actually greater than what a hen can absorb from the diet each day. Therefore, in order to shell an egg properly, the bird must utilize the calcium that has been stored in her skeleton.

Adequate calcium must be present in the diet prior the hen beginning egg production or over time she will deplete the calcium in her skeleton and develop brittle bones or osteoporosis (similar to the condition that occurs in women). Calcium should comprise 3-3.5% of the laying hen ration. Whole grains contain far less than 1% calcium and so whole grain and scratch grain diets are not adequate for egg producing hens.





The Disease

A deficiency of calcium and vitamin D3 in the diet of laying hens will result in poor egg shell quality and reduced egg production. Egg shells will become soft, improperly formed and may have shell deformities. Over time, egg production will decrease and hens may develop osteoporosis (brittle bones that break easily). These hens will be found "off their legs" and unable to stand and may appear to be paralyzed. Occasionally hens may become "egg bound" and unable to pass eggs. This condition is due to depletion of calcium in the blood stream and insufficient calcium being available for proper muscle contraction of the uterus during the egg laying process.

Many back yard and hobby farmers keep a few hens for supplying eggs and also grow out some meat type birds and perhaps keep a few roosters. It is important to note that roosters and young growing birds cannot handle high calcium diets and will develop severe kidney disease if high levels of calcium diets are fed. So if you have both egg laying hens as well as roosters and young growing stock on your farm, they must be fed separate diets.

Calcium regulation and calcium demand is different in male birds and young growing birds compared to producing laying hens. The excess calcium taken in the diet must be eliminated either by decreased gut absorption or by excretion via the kidneys. The high mineral content damages the kidney tubules and results in abnormal deposition of calcium in muscle, heart, blood vessel walls and other organs that quickly kill the birds.

Treatment

Calcium deficiency is difficult to reverse once the hen has reached the point where the skeletal calcium stores are depleted. Calcium and vitamin D3 supplementation combined with feeding a proper diet is the only treatment. The only way to prevent this condition is to provide a proper diet with high levels of calcium prior to the start of egg production to ensure that adequate calcium has been stored in the skeleton. This is followed by providing a properly balanced diet during the egg production cycle.



Remember, roosters and growing birds should not be fed layer diets. There is no treatment for hypercalcemia and renal failure other than changing the diet and supplying adequate drinking water to help flush the kidneys.



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OMAFRA's
Agricultural
Information
Contact Centre:
1-877-424-1300