Happier, healthier, more productive hens on omega-3?

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Most of us are aware of the potential health benefits of omega-3 found in fish oil and flax seed. Now researchers are looking at how omega-3 may help laying hens avoid bone damage.

A grant of £1.7 million has been awarded to Dr John Tarlton of the University of Bristol's Matrix Biology Research Group in the School of Clinical Veterinary Sciences by the Biotechnology and Biological Sciences Research Council (BBSRC) and industrial partner, Noble Foods, the UK's leading egg production company. The three-year research project will investigate the benefits of omega-3 supplemented diets in laying hens.

Eighteen million laying hens in the UK will need to be "re-housed" within the next four years as a result of a EU ruling banning conventional cage systems. Because of greater rates of bone breakage in free-range systems this represents a serious welfare issue for the poultry and egg production industry.

Concern about the welfare of laying hens housed in non-cage systems was expressed in the 1990s, when the issue of broken bones within flocks was reported. Latest evidence suggests this is getting worse, with many birds from barn and free range flocks having sustained breaks or fractures by the end of their lifetime.

Fractures of the sternum (keel) are common, causing pain, preventing important behaviours and leading to an increase in infection rate.

Chickens possess sensitive pain perception mechanisms and can suffer from chronic pain.

Constraints on movement due to fractures may last for many weeks, resulting in restricted access to food, water, and perches, compromising the welfare benefits of free-range systems.

The research group has identified a high incidence of broken bones in hens housed in free-range systems. However, preliminary studies suggest that by providing a diet supplemented with omega-3, found in fish and flax seed oils, breakages could be substantially reduced.

Dr Tarlton said: "The EU ruling represents an impending welfare crisis in which millions more laying hens may suffer bone breakage or fractures in the UK each year.

"Fractures vary in severity and often result in gross skeletal damage and even death in some birds. Other than the welfare issue, wastage and loss in production are a considerable financial burden to the industry, reducing economic viability and increasing costs. By feeding the hens on omega-3 we hope to substantially improve their welfare and reduce costs due to injury, with the bonus that the eggs produced are also better for us."

The study will house sixteen flocks of 1,500 hens each in identical dedicated free-range systems provided by Noble Foods.

In the first year the researchers will compare a high omega-3 "Goldenlay" diet, fed from 16 weeks, with a standard diet. In the second year all hens will be fed on the "Goldenlay" diet from 16 weeks but with half transferred to a standard diet at 35 weeks. This will allow the researchers to find out if an omega-3 diet has direct welfare and bone benefits in laying hens, and whether these benefits persist even when

taken off the diet.

Dr Tarlton will lead a multidisciplinary team to investigate the benefits of supplemented omega-3 diets in laying hens. They will look at the full biochemical and cellular mechanisms through which omega-3 is able to improve bone health. This research will also relate to osteoporosis in humans, a disease that affects six million sufferers in the UK.

Dr Tarlton added: "By supplementing with omega-3 we hope to be able to retain the environmental benefits of free range systems without incurring a welfare cost in terms of increased bone breakage. Also by studying the mechanisms of improved bone strength we plan to demonstrate how this may help human patients suffering from osteoporosis."

Source: University of Bristol