B-22: Cholesterol and carotenoid content of eggs in free range and cage reared hens

Karthiyayini Subramaniam
(Div of Animal Nutrition, Veterinary Research Institute, Gannoruwa)

Cholesterol content of human diet, especially of those with atherosclerosis, warrants a study on the amount of cholesterol in egg. Further the popular belief that eggs of village hens are rich in carotenoid needs to be investigated.

In this study eggs from 3 breeds, 3 feeding systems and 4 age groups were analysed. The shaver 579 a hybrid layer, village chicken and shaver village chicken crossbreed were the 3 breeds. The feeding systems were choice feeding, conventional feeding and free range scavenging. Boiled egg yolk (1g) was extracted with isopropyl alcohol (10 ml) by shaking for 2 h and solvent separated by centrifugation. Cholesterol and carotenoid contents were estimated using a spectrometer, Klette summerson photometer respectively.

The cholesterol concentration (per g of yolk) was similar in all 3 breeds. However total cholesterol per yolk was higher in shaver (242 mg) than village hen (221 mg). There was no significant difference between cholesterol content in the 3 dietary treatments. Cholesterol content was also similar in different age groups.

Eggs from village hens on free range had significantly high ($P < 0.05$) carotenoid content (503 μg/yolk) compared to village hens on commercial and choice feeding (165 and 212 μg/yolk respectively). There was a significant difference ($P < 0.05$) in carotenoid content in breeds. The village hen had higher level (192 μg) than hybrid layer (138 μg) per yolk. The cross breed had a value in between hybrid and village hen (177μg). There was also a significant difference ($P < 0.05$) in carotenoid content of different ages, 2nd and 3rd laying cycles having higher values (366, 349 μg per yolk) than 1st and 4th laying cycles (241, 230 μg per yolk) respectively. The results were reflected in a similar manner in the carotenoid concentration (per g of yolk).

The study revealed that total cholesterol content of an egg was dependent on the yolk weight. Rearing the village chicken in cages resulted in a significant lowering of the carotenoid content by 60%. Further the scavenging village chicken were a good source of carotenoid.