

Sel-Plex® Improves Spermatozoa Morphology in Broiler Breeder Males

F.W. Edens*¹ and A.E. Sefton²

¹Department of Poultry Science, North Carolina State University, Raleigh, NC 27695, USA ²Alltech Biotechnology Center, Nicholasville, KY 40356, USA

Abstract :

Sodium Selenite (SEL) has been the traditional source of Selenium (Se) in poultry diets, but Sel-Plex® (SP, a source of organic selenium in yeast protein, Alltech Inc.) has become widely used in several countries signaling its importance as a replacement for SEL. SP is equivalent or even superior to SEL in terms of gut absorption, performance, induction of whole body feathering and tissue retention. Therefore, it was important to extend our understanding of the influence of selenium on performance characteristics of poultry by comparing the influence of SEL or SP in broiler breeder roosters. In the first part of this investigation, 14-week-old roosters were fed diets that contained SEL, SP, or no supplemental selenium (deficient). Selenium-supplemented roosters produced semen at 19 weeks of age while selenium-deficient roosters did not produce semen until 26 weeks of age. Semen quality, as indicated by spermatozoal morphology, was best for SP-fed roosters and SEL-fed roosters produced semen with a quality that was intermediate between SP-fed and selenium-deficient rooster semen quality. In the second part of this investigation, adult roosters in a commercial setting were fed SEL at 0.3 ppm Se/kg of diet until they were 19 weeks of age and then half of the males on each of two farms were fed SP at 0.3 ppm Se/kg of diet. At 32 and 42 weeks of age, semen samples were evaluated via microscopy for quality based on spermatozoal morphology and spectrophotometric analysis to determine a sperm quality index, consisting of a composite determined by sperm motility and sperm density in the semen sample. The results from the laboratory trial and the field trial suggest that SP is superior to SEL as a source of selenium for broiler breeder males. This conclusion was further supported by histological evaluation of testicular tissues from roosters fed either no supplemental selenium, SP or SEL.

Key Word :

Sel-Plex®, selenium, broiler breeder, testes, semen, spermatozoa

Volume 8, Number 9, - 2009, ISSN 1682-8356