

Dose response of Se added as sodiumselenite or Sel-Plex on male sperm quality and breeder productivity

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Six groups of 25 hens + 5 cocks aged 25 were subjected to 6 treatments during 3 months. Se was added to the feed to a level of 0.2, 0.3 or 0.4 ppm, either as sodiumselenite or Sel-Plex (Alltech Inc, USA). Semen was collected from the cocks prior to the start, and at 1, 2 and 3 months. Percentage of defective spermatozoa and spermatozoa numbers were determined monthly, fertility of the eggs was determined continuously and summarized monthly. Statistical analysis was performed for the whole 3 month period by Anova and stated significant when $P < 0.05$.

The percentage of defective spermatozoa (%) decreased significantly with increasing levels of added Se as Sel-Plex compared to Se from sodiumselenite, being 5.8, 5.4 and 5.4 % for sodiumselenite compared to 5.4, 4.8 and 4.8 % for Sel-Plex. The number of spermatozoa was also increased significantly by the use of Sel-Plex (up to 20 % increase). Egg fertility was improved significantly by the supplementation of Se under form of Sel-Plex compared to sodiumselenite. While for the latter fertility was 89.4, 90.8 and 91.2 % at levels of 0.2, 0.3 and 0.4 added Se, these values were 2.7 to 3.9 % higher when Se as Sel-Plex was provided (93.4, 93.5 and 95.1 % respectively).

These results indicate that providing Se in form of Sel-Plex has a major impact on fertility compared to sodiumselenite, and that at least 0.3 ppm Se as Sel-Plex should be included in the diets to obtain optimal effects on male sperm and hatchability of the fertilized eggs.

Keyword: Sodium selenite; Sel-Plex; broiler reeder; sperm; fertility

Introduction

The use of Se to improve fertility acts by two ways. A primary effect is on the breeder performance determined by a higher number of viable chicks produced. On the male side, the effect of Se on maintaining sperm quality and quantity is of major interest.

Objective

The objective of the trial was to evaluate the effect of supplementation of Se under form of sodium selenite or Sel-Plex on sperm integrity, sperm number and fertilization potential of the male sperm.

Material and methods

Six groups of 25 hens + 5 cocks (Radonezh local breed), aged 25 were set up. In total there were six treatments (conducted during 3 months): Se was added to the basic feed to a level of 0.2, 0.3 or 0.4 ppm, either in the form of sodium selenite or Sel-Plex (Alltech Inc., USA). Semen was collected from the cocks prior to the start, and at 1, 2 and 3 months after the start of the trial. The percentage of defective spermatozoa and spermatozoa numbers were determined monthly while fertility of the eggs

was determined continuously and summarized monthly. Statistical analysis was performed for the whole 3 month period by Anova. Significance is stated when $P < 0.05$.

Results and discussion

The percentage of defective spermatozoa (%) decreased with increasing levels of added Se as Sel-Plex compared to Se from sodiumselenite (significant different at all levels, *Table 1*).

Table 1 Defective spermatozoa (%) at different inclusion levels of Se either as sodiumselenite or Sel-Plex

Se inclusion in feed (ppm)	Delenite	Sel-Plex
0.2	5,8	5,4
0.3	5,5	4,8
0.4	5,4	4,8

The number of spermatozoa over the whole 3 month period was also increased significantly by the use of Sel-Plex (up to 20 % increase, *Figure 1*). Egg fertility was improved significantly by the supplementation of Se under form of Sel-Plex compared to sodium selenite. While for the latter fertility was 89.4, 90.8 and 91.2 % at levels of 0.2, 0.3 and 0.4 added Se, these values 2.7 to 3.9 % higher when Se as Sel-Plex was provided (93.4, 93.5 and 95.1 % respectively) (*Table 2*).

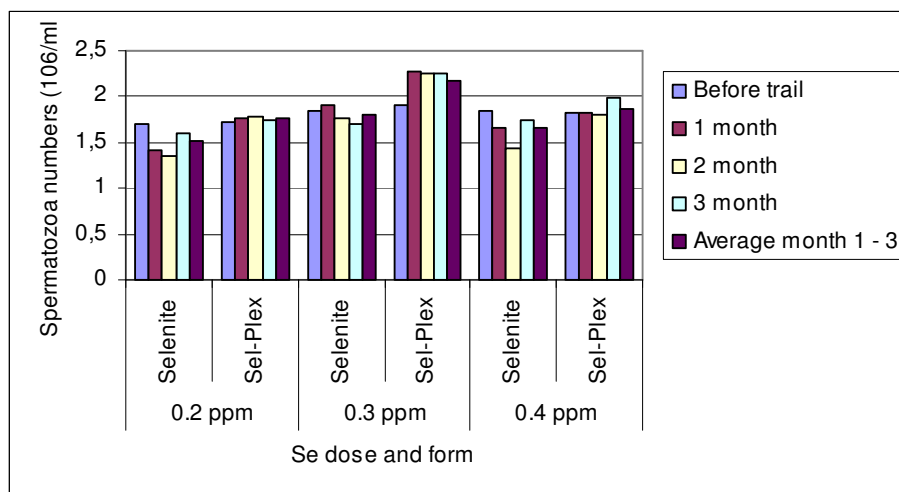


Figure 1 Spermatozoa number in ejaculate using se as selenite or Sel-Plex (3 month period)

Table 2: Overall fertility at different inclusion levels of Se either as sodiumselenite or Sel-Plex (3 month period)

Se inclusion in feed (ppm)	Selenite	Sel-Plex
0.2	89.4	93.4
0.3	90.8	93.5
0.4	91.2	95.1

These results indicate providing Se in form of Sel-Plex had a major impact on fertility compared to sodium selenite, and that at least 0.3 ppm Se as Sel-Plex should be included in the diets to obtain optimal effects on male sperm and hatchability of the fertilized eggs.