

EFFECT OF SUPPLEMENTATION OF SELENIUM AND VITAMIN E ON THE REPRODUCTIVE PREFORMANCE OF LARGE WHITE YORKSHIRE PIGS

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Supplementary vitamins for sows at Kattupakkam - 603 203 account for only 2-3 per cent of the total cost of a mixed feed. Vitamin E is known for its ability to improve livestock immune system, which can be beneficial during the stressful late gestation period. Selenium has a sparing effect on Vitamin E. Pigs fed with cereals grown in selenium deficient soil followed by processing, suffer from complex deficiency due to the formation of abnormal phospholipids at cell membranes which affects non-energy metabolism becoming one of the predisposing factors for certain diseases *Viz.* Hepatosis Dietica, White Muscle Disease, Hertzod Yellow Fat disease and Infertility. The objective of this study is to assess the reproductive performance of sows by supplementing vitamin E and selenium.

The trial consists of two groups (ten animals per group) of randomly selected Large White Yorkshire (LWY) breeding sows aged 3-4 years. Group I was fed with concentrate diet devoid of vitamin E and Selenium while group II was injected with Vitamin E (110, I.U/animal) and Selenium (3 mg./animal), respectively (Ecarse, Vet India) intramuscularly, thrice on 5th day prior to mating, 30th and 60th days during gestation. The data obtained on reproductive performance in this study was statistically analyzed as per the methods described by Snedecor and Cochran (1985).

The reproductive performances of the two groups are presented in Table I. Though the groups had an equal conception percentage, an increase in litter size, 11.5±0.47 was observed in-group

II compared in Group I with 10.1±0.46 which varied significantly ($P \leq 0.05$). Levander (1986) also reported that a single, subcutaneous 2.5-mg dose of Se as selenite given to sows just before mating resulted in a significant increase in farrowing percentages in Australian piggeries. Mahan (1994) found that gilts fed with Se and Vitamin E in feed over three parities had increased Litter size at birth. Cristos Antipatis (2002) also reported similar finding. Chavez *et al.* (1986) reported that supplementation via periodic injections of vitamin E and selenium may result in increased litter size both at birth and weaning, as well as an increase in litter weight at birth. When selenium's status as an essential micronutrient was being established, it became evident that the two substances, vitamin E and selenium, acted synergistically. Hoekstra (1975) proposed that their synergism related to the process of antioxidation, wherein tocopherols tended to prevent oxidative damage to polyunsaturated fats in cell membranes, whereas selenium, as part of seleno-enzyme glutathione peroxidase, catalyzed the destruction of lipid hydroperoxides. This explains how these two nutrients play separate but interrelated roles in the cellular defense system against oxidative damage. The Vitamin E and selenium supplemented group showed an increase in live piglets born in-group II with reduced stillbirth. The birth weight of piglets did not vary significantly but the weaning weight of piglets was significantly high in-group II. A considerable decrease in preweaning mortality was recorded from 11.6 % in-group I to 1.87% in-group II which was in tune with the findings of Stanley Janyk (2001). Migdal

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and Kaczmarczyk (1993) also concluded that the injection of Se and vitamin E in gestation results in a higher survival rate and better growth, in spite of the fact that daily diets (control) met requirements for these components. Peplowski *et al.* (1981) observed that supplemental selenium and vitamin E had a positive and additive effect in enhancing immune responses in weanling swine. Vitamin E functions, as does dietary selenium, to improve animals' immune response. Ellis and Vorhies (1976) have reported that increasing the vitamin E level of the swine diet over that generally considered adequate led to increased titers of serum antibodies to *Escherichia coli* bacteria. This reason could be attributed for better survival during preweaning stage.

From the above it could be concluded that supplementation of Vitamin E and Selenium in sows diet will positively influence the reproductive performance and immunity in piglets and reduce the stress due to environment and managerial practices, thereby improving the profit among pig farmers.

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Table 1
Reproductive performance of Experimental Groups

Sr. No.	Particulars	Group 1 (Control)	Group II (Vit. E and Selenium treated)
1	Number of sows served	10	10
2	Litter size at birth	10.15 ^a 46	11.56 ^b 47 ^a
3	Total born alive	9.56 ^a 41	10.92 ^b 36
4	Number of still births	0.92 ^a 36	0.62 ^a 21
5	Birth weight of piglets	1.15 ^a 03	1.26 ^b 29
6	Weaning weight of piglets	10.62 ^a 002	11.26 ^b 22 ¹¹
7	Weaning size	8.42 ^a 53	10.26 ^b 33
8	Preweaning mortality	11.2%	1.87%

Values bearing different superscripts differ significantly ($P \leq 0.01$)