

114 Evaluation of Selenium Source on Nursery Pig Growth Performance, Serum and Tissue Selenium Concentrations, and Serum Antioxidant Status. Zhong-Xing Rao¹, Mike D. Tokach¹, Jason C. Woodworth¹, Joel M. DeRouchey¹, Robert D. Goodband¹, Jordan T. Gebhardt¹,
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Abstract: A total of 3,888 pigs (337×1050, PIC, Hendersonville, TN; 6.0 kg at weaning) were used in a 42-d study to determine the influence of Se source on nursery pig selenium status and growth performance. At placement, pens of pigs were weighed and allotted to 1 of 3 dietary treatments in a randomized complete block design with blocking structure including sow farm origin, date of entry, and average pen BW. A total of 144 pens were used with 72 double-sided 5-hole stainless steel, fence-line feeders, with feeder serving as the experimental unit. For each feeder, 1 pen contained 27 gilts and the other 27 barrows. There were 24 replicates per treatment. Diets were fed in 3 phases, and all contained 0.3 ppm added Se. A common phase 1 diet contained added Se from sodium selenite and was fed in pelleted form to all pigs for 7 d prior to initiation of treatment diets. Three Se sources [sodium selenite; Se yeast; and hydroxy-selenomethionine (OH-SeMet)] were used to formulate 3 experimental treatments in meal form for phase 2 (d 7 to 21) and phase 3 (d 21 to 42). During the common phase 1 period, ADFI tended ($P < 0.10$) to be different (107, 103, and 102 g/d) for sodium selenite, Se yeast, and OH-SeMet, respectively. From d 7 to 42 (treatment period), pigs fed OH-SeMet tended to have decreased ADG ($P < 0.10$) and had increased ($P < 0.05$) serum, liver, and muscle selenium concentration compared with other treatments. There was no difference ($P > 0.05$) in antioxidant status as measured by serum GSH-Px or TBARS. In summary, compared with sodium selenite and selenium yeast, OH-SeMet had greater bioavailability as indicated by increased serum and tissue selenium concentration; however, antioxidant status was similar between treatments and OH-SeMet tended to reduce growth performance compared with pigs fed sodium selenite.

Table 1. Evaluation of Se source on nursery pig growth performance

Item	Sodium selenite	Se yeast	OH-SeMet	SEM	P =
d 7 to 42					
d 7 BW, kg	6.6	6.6	6.6	0.08	0.485
d 42 BW, kg	26.9	26.7	26.7	0.11	0.312
ADG, g	577 ^a	571 ^{bc}	567 ^c	3.0	0.066
ADFI, g	769	759	756	4.8	0.100
Gain:feed, g/kg	750	752	750	2.1	0.560
Serum selenium, ng/mL					
d 21	130.9 ^{cd}	121.8 ^d	138.8 ^c	3.72	---
d 42	183.7 ^b	183.8 ^b	204.6 ^a	3.72	---
Liver selenium, µg/g					
d 42	1.97 ^b	1.99 ^b	2.45 ^a	0.049	< 0.0001
Muscle selenium, µg/g					
d 42	0.81 ^b	0.87 ^b	1.42 ^a	0.024	< 0.0001

¹P-value: source × day (0.072), source (0.002), and day (< 0.001).
^{ab}Means within a row with different superscripts differ ($P \leq 0.05$).
^{abc}Means within a row with different superscripts differ ($0.05 < P \leq 0.10$).

Keywords: antioxidant status, growth, nursery pigs, selenium