# Dietary selenized yeast increases the selenium content whereas organic iron (sqm) has no effect on the iron content of pork

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The human health benefits of dietary selenium (Se) and iron (Fe) are well established (Rayman, 1997; Kristensen *et al.*, 2005). Meat and meat products are primary sources of dietary Se and iron for humans. Pork from Se and Fe-supplemented pigs may provide an additional source of these nutrients. However, the effects of supplementation of Se and iron on their status in muscles and effects on pork quality are not clearly defined. This study examined the effects of dietary Se and Fe supplementation on the Se and Fe status and meat quality of pork.

Crossbred finisher pigs (n=18 boars and 18 gilts), were offered *ad libitum* access to one of six experimental diets: 1) Basal: 0.13 mg/kg sodium selenite + 50 mg/kg iron (II) sulphate; 2) 3 mg/kg Diamond V Se (Diamond V Mills Inc); 3) 9 mg/kg Diamond V Se; 4) 100 mg/kg SQM Fe (Quali Tech®); 5) 1000 mg/kg SQM Fe and 6) 3 mg/kg Diamond V Se + 100 mg/kg SQM Fe, and were slaughtered after 28 days. *Longissimus dorsi* (LM) and *Biceps femoris* (BF) muscles were analyzed for Se and Fe levels. Pork quality measures were taken 24 hours post-slaughter in LM muscles. Instrumental colour (*L**, *a** and *b**) and Warner-Bratzler shear force were measured up to five days of aging. Data were pooled across sexes and analyzed using analysis of variance.

Dietary Se supplementation significantly ($P<0.0001$) increased the Se concentration of pork in a linear manner (Table 1). Conversely, the Fe supplements had no effect on the Fe content in both LM ($P=0.88$) and BF ($P=0.14$). The Fe content of LM and BF muscles were higher ($P<0.0004$ and $P<0.056$ respectively) in gilts than boars. Neither Se nor Fe supplements had an effect on pig performance, carcass traits or meat quality parameters ($P>0.05$). The results indicate the potential for healthful fortification of pork with organic Se, whereas no beneficial effects of feeding higher levels of organic Fe were identified. Higher Fe levels observed in gilts over the boars warrant further investigation.

**Table 1. Effect of the dietary Se and Fe supplements on Se and Fe status in LM and BF muscles, live pig performance, carcass composition and pork quality**

| | | Se ppm | | Fe ppm | | Se/Fe ppm | | |
|---|---|---|---|---|---|---|---|---|
| **Attribute** | **Basal** | **3** | **9** | **100** | **1000** | **3/100** | **SE** | **P-value** |
| ADG, kg | 1.03 | 1.04 | 1.01 | 1.07 | 0.97 | 1.05 | 0.06 | 0.84 |
| LM- Fe, mg/kg | 12.3 | 12.5 | 12.3 | 12.2 | 11.7 | 13.2 | 0.71 | 0.79 |
| BF- Fe, mg/kg | 11.7 | 14.8 | 9.3 | 10.0 | 10.8 | 12.3 | 0.72 | 0.15 |
| LM- Se, μg/kg | 133.3 | 903.3 | 2433.3 | 125.0 | 131.7 | 980.0 | 57.5 | <0.0001 |
| BF- Se μg/kg | 138.3 | 935.0 | 2533.3 | 138.3 | 138.3 | 976.7 | 54.3 | <0.0001 |
| Ultimate pH (24-h) | 5.6 | 5.5 | 5.4 | 5.6 | 5.5 | 5.5 | 0.05 | 0.84 |
| Drip loss, % (48-h) | 4.3 | 6.5 | 6.8 | 6.3 | 6.0 | 6.7 | 0.72 | 0.19 |
| Shear Force, kg (5-d) | 3.2 | 3.5 | 3.0 | 3.4 | 3.5 | 3.0 | 0.24 | 0.37 |
| *L** (5-d) | 48.3 | 48.2 | 49.4 | 48.3 | 48.8 | 49.7 | 0.88 | 0.76 |
| *a** (5-d) | 6.3 | 6.2 | 5.7 | 6.1 | 5.6 | 6.0 | 0.31 | 0.58 |
| *b**(5-d) | 5.4 | 5.4 | 5.5 | 5.8 | 5.4 | 5.9 | 0.29 | 0.69 |

References

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