# Anwendungsbericht/User Application Report

**Produkt/Product:**
penergetic t 1244
finisher

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## To determine if penergetic t can improve carcass and meat quality, without the addition of chelated trace mineral in fattening pigs, Thailand.

This was the second test at Kasetsart University, Nakronpathom, Thailand to verify the universal results in a practical farm test at V swine farm, Nakronpathom, Thailand.

## Methods

- 150 crossbred pigs
- Initial body weight of 79 kg
- Separated by sex and initial body weight
- Randomized complete block design

## Treatments

Diet with control and 2 different dosage of penergetic t fattening 1244

| Dietary treatments | | |
|---|---|---|
| Control diet | Control diet and penergetic t fattening 200 ppm | Control diet and penergetic t fattening 400 ppm |

## Material and Methods

| | |
|---|---|
| Diet: | Basal diet based on corn - SBM formulated to meet nutrient requirement according to NRC 2012 |
| Feeding: | Pigs were fed twice a day with restrict consumption<br>Water was provided ad libitum |
| Housing: | open house system |


## Data collection

### Growth performance

- All feed intake was routinely recorded followed by phase feeding
- All individual pigs were weighed at the beginning and after trial
- Average Daily Gain (ADG) and Feed Conversion Ratio (FCR) were calculated

### General health

- Pigs were monitored and assessed daily for signs of sick-health or injury.
- Sick and dead pigs were removed and recorded.
- Mortality rate was calculated

### Carcass quality:

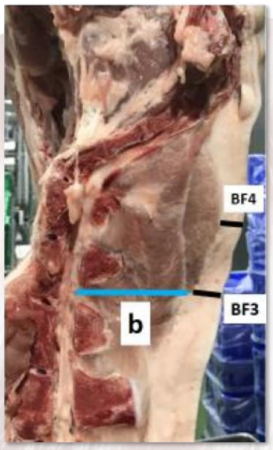
- All pigs were weighed & slaughtered to evaluate the **carcass %** in each part
- **30** chilled carcasses per group were evaluated on **backfat thickness** followed by LSQ criteria (Sethakul et al., 2003)
- **Meat color** was evaluated using the color chart scale of the Canadian pork quality standard

## Body weight and Carcass Quality

**The LSQ, fat-lean meat ratio = (BF3 + BF4)/(2 x b)**

BF3 = back fat thickness at the front base of gluteus muscle
BF4 = back fat thickness on top of gluteus muscle
b = distance from the front base of gluteus muscle to the dorsal border of the spinal cord

| Grade | LQS |
|---|---|
| A | < 0.2 |
| B | 0.21 – 0.26 |
| C | 0.27 – 0.31 |
| D | 0.33 – 0.38 |
| E | 0.39 – 0.44 |
| F | >0.45 |



| | Control | penergetic t 200 ppm | penergetic t 400 ppm | SEM | P-Value |
|---|---|---|---|---|---|
| Initial BW in kg | 79.30 | 79.30 | 79.30 | 0.00 | - |
| Final BW in kg | 104.00 | 101.07 | 105.05 | 2.60 | 0.53 |
| Weight gain, kg | 24.70 | 21.77 | 25.75 | 2.60 | 0.53 |
| ADG, gram per day | 719.85 | 690.03 | 733.02 | 52.52 | 0.84 |
| ADFI, gram per day | 2.689 | 2.764 | 2.750 | 72.90 | 0.58 |
| FCR | 3.80 | 4.07 | 3.79 | 0.23 | 0.55 |
| Mortality in % | 2.70 | 0.31 | 1.98 | 0.23 | 0.55 |

All parameters were not significantly different among all groups (P > 0.05)

Control Diet

Control Diet
+ penergetic t 200 ppm

Control Diet
+ penergetic t 400 ppm

| LQS | Control | penergetic t 200 ppm | penergetic t 400 ppm |
|---|---|---|---|
| Backfat thickness in % | 63.4 | 90 | 93.3 |

## Cut up yield in %

| Parameters in % | Control | penergetic t 200 ppm | penergetic t 400 ppm | SEM | P-Value |
|---|---|---|---|---|---|
| Carcass | 76.18 | 73.15 | 73.28 | 1.41 | 0.25 |
| Loin | 7.70 | 8.15 | 8.61 | 0.29 | 0.11 |
| Shoulder | 9.83 | 9.82 | 9.06 | 0.50 | 0.48 |
| Belly | 14.21 | 13.94 | 13.37 | 0.27 | 0.10 |
| Ham | 18.27 | 18.99 | 19.39 | 0.37 | 0.12 |
| Collar | 5.44 | 5.07 | 5.35 | 0.21 | 0.44 |
| Ribs | 5.32[b] | 5.32[b] | 5.97[a] | 0.13 | 0.001 |

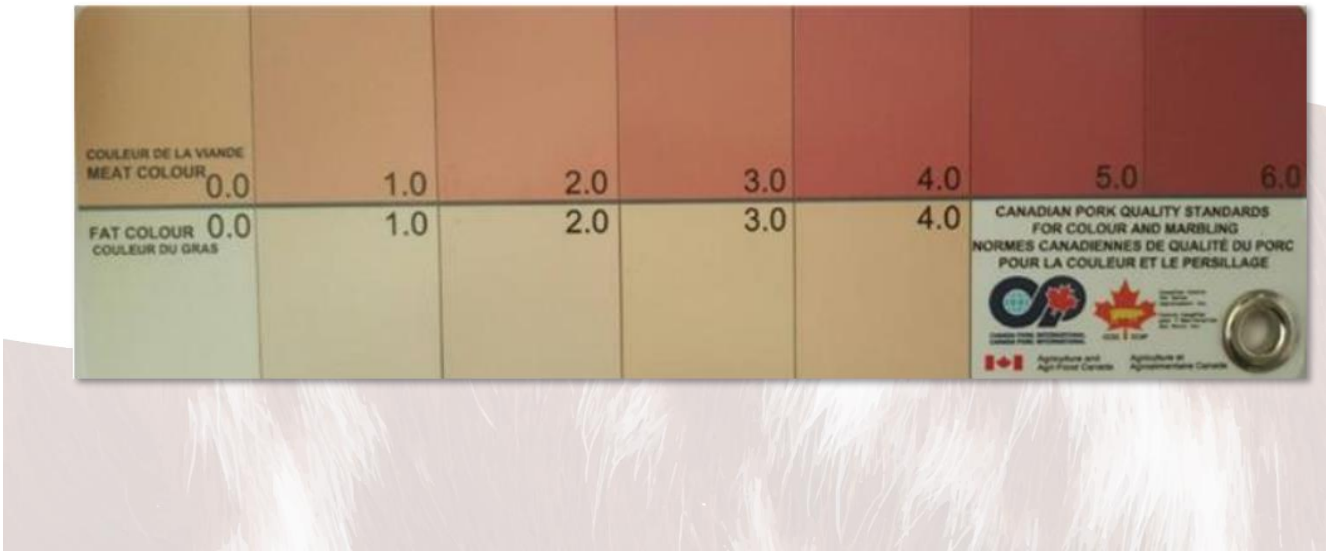
a, b Means within a row with no common superscript differ significantly (P < 0.05)

## Carcass colour

| Parameters in % | Control | penergetic t 200 ppm | penergetic t 400 ppm | SEM | P-Value |
|---|---|---|---|---|---|
| Colour | 2.93[a] | 2.17[b] | 2.13[b] | 0.13 | < 0.0001 |

a, b Means within a row with no common superscript differ significantly (P < 0.05)

## Carcass colour scheme



## Meat Quality

| Parameters | Control | penergetic t 200 ppm | penergetic t 400 ppm | SEM | P-value |
|---|---|---|---|---|---|
| Drip loss in % | 2.85[b] | 4.18[a] | 5.52[a] | 0.01 | <0.001 |
| Cooking loss in % | 40.41 [a] | 33.44 [b] | 35.53 [b] | 0.01 | <0.001 |
| Colour | | | | | |
| L* | 57.04 [b] | 58.36 [ab] | 59.11[a] | 0.51 | 0.03 |
| a* | 3.30 [a] | 1.97 [b] | 2.51 [b] | 0.23 | <0.001 |
| b* | 11.82 [a] | 12.07 [b] | 13.31 [a] | 0.20 | <0.001 |
| pH | 5.52[a] | 4.83[c] | 5.38[b] | 0.05 | <0.001 |
| Shear force (N)[1] | 60.94 | 53.41 | 46.11 | 4.31 | 0.072 |

a, b Means within a row with no common superscript differ significantly (P < 0.05)

## Conclusion

- Pigs (20-24 weeks of age) fed corn-SBM diet supplemented with penergetic t Fattening 1244 at the levels of 200 ppm and 400 ppm have no negative effects on growth performance compared to pigs fed control diet.

- For the carcass grading, pigs with penergetic t Fattening 1244 at 200 ppm and 400 ppm had the **higher ratio of grade A + grade B carcasses** compared to pigs control diet.

*The CIE L* a* b* system is one of the colour systems which is used for assessing meat surface colour. These values are used as indicators of meat quality and a predictor of preferred visual colour. For instance, Lightness (L*) and Redness (a*) are used as indicators for PSE (pale, soft, exudate) and/or DFD (Dark, firm, dry) in pork meat.
A higher score means brighter or less desirable, with the optimal score depending on the standard of the measuring device used for the measurement.

[1] Shear force is one of the major parameters to measure meat tenderness and softness. The lower unit of N (Newton force) is more favourable to the customer than a higher value of unit.