

# Increasing the dietary methionine-to-lysine ratio in early gestation of sows did not affect piglet birth weight and within-litter variation in birth weight

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## INTRODUCTION

Methionine plays an important role in development of the placenta and it has recently been shown that increasing Met:Lys in diets of sows can increase birth weight of piglets. It was hypothesized that increasing dietary Met:Lys ratio for sows in early gestation would have a positive effect on fetal and placental development and piglet birth weight and within-litter variation in birth weight. The aim of this study was to test the effect of increasing the dietary Met:Lys ratio in early gestation.

## MATERIALS AND METHODS

A total of 349 multiparous DanBred Landrace x DanBred Yorkshire sows were allocated to either a Control diet or a Met diet with extra Met increasing the SID Met:Lys from 0.33 in control diet to 0.50 in Met diet. Sows were fed the two diets from mating to day 50 of gestation. From day 50 and until day 112 all sows were fed the control diet. See composition of Control and Met in Table 1. Diets were based on wheat, barley, wheat bran, soybean meal, sugar beet pellets and soy oil.

**Table 1. Composition of diets fed from mating to day 50 of gestation**

Composition	Control	Met
Energy (ME), MJ per kg	12.1	12.1
SID protein, g/kg	94.8	94.8
SID Lys, g/kg	4.64	4.64
SID Met, g/kg	1.51	2.32
SID Cys, g/kg	1.89	1.88
SID Met:Lys ratio	0.33	0.50

At day 50 of gestation 6 Control and 3 Met sows were slaughtered to investigate fetal and placental development. At birth individual measurements on piglets were carried out on 59 and 57 litters from Control and Met sows, respectively.

## Registrations on sows:

- Back fat thickness (Lean-Meater at P2 site) at weaning, day 14, 50 and 112 of gestation
- Farrowing results in previous and current cycle

## Registrations on fetuses (day 50 of gestation):

- Fetal weight and organ weights
- Characteristics of placenta

## Registrations on newborn piglets at farrowing:

- Individual birth weight
- Crown rump length
- Abdominal circumference
- IUGR-score
- Sex



## RESULTS

	N sows	Control	Met	SE	P-value (diet)
<b>Parity of sows</b>	<b>349</b>	<b>3.1</b>	<b>3.0</b>	<b>0.09</b>	<b>0.358</b>
<b>Fetal and placental development at day 50</b>					
Number of live fetuses	9	23.7	22.6	3.15	0.755
Number of corpus lutea	9	37.3	34.0	2.74	0.650
Fetal survival, %	9	64.3	68.6	10.1	0.777
Fetal weight, g	9	44.4	44.3	2.38	0.967
Placental weight, g	9	89.2	87.3	9.86	0.727
Placental area, cm <sup>2</sup>	9	798	845	48.5	0.607
<b>Farrowing results</b>					
Live born previous cycle	349	17.7	17.9	0.25	0.841
Still born previous cycle	349	1.2	1.0	0.10	0.272
Live born current cycle	349	19.4	19.2	0.32	0.523
Still born current cycle	349	1.7	1.7	0.12	0.929
Average piglet birth weight, g	116	1234	1263	38.0	0.856
Within-litter variation in piglet birth weight, g	116	292	293	10.7	0.626
Abdominal circumference, cm	116	24.0	24.4	0.26	0.719
Crown-rump length, cm	116	31.4	31.8	0.88	0.692
% of piglets below 1 kg	116	25.8	22.2	2.70	0.714
% of piglets below 0.8 kg	116	11.3	11.0	1.60	0.506
<b>Back fat thickness, mm</b>					
Weaning	349	12.4	11.8	0.37	0.060
Day 14 of gestation	349	12.8	13.1	0.29	0.595
Day 50 of gestation	349	13.9	14.1	0.29	0.904
Day 112 of gestation	349	15.0	15.2	0.34	0.681

## CONCLUSION

- Increased dietary Met:Lys ratio did not affect fetal and placental development
- Increased dietary Met:Lys ratio did not affect piglet birth weight and within-litter variation in birth weight.