P5: 5 ug/ml) or calcium ionophore A23187 (1 ug/ml). The fatty acid profile of serum and
seeds of piglets was significantly affected by the fat source provided to the sow. Arachidonic acid
(A20:4n-6) levels were typically 2-3 fold lower (P < 0.0001) in FO vs. LA piglets. Levels of
palmitoelaidic acid (EPA=20:5n-3), the major n-3 fatty acid, in the blood and tissues were 50 to
20 times greater (P < 0.0001) in FO vs. LA piglets. PGE2 production by AM was 70% lower in FO
and LA pigs (1491 vs 435 pg/ml; P < 0.02) when stimulated with LPS for 24 hr. PGE2 production
of PGE2 was 50% lower in FO vs. LA pigs (1245 vs 2902 pg/ml; P < 0.08) when stimulated with
A23187. In conclusion, substituting FO for LA in a sow’s late-gestation and lactation diet greatly
alters the content of n-3 fatty acids in the nursing pig and reduces the PGE2 production of
immune cells.

KEYWORDS. Fish oil, immune tissues, prostaglandin E2

Quantitative influence of lysine and energy intake on yield of milk components in the
lactating sow. H. D. Tokach*, J. E. Pettigrew, B. A. Crocker and A. P. Sower,
University of Minnesota, St. Paul.

A regression approach was utilized to quantitatively assess the influence of lysine (Lys) and
measurable energy (ME) intake during lactation on yield of milk components, and to determine whether
such influence is mediated through precursor metabolite concentrations in the blood. Twenty
primiparous Landrace x Yorkshire sows were fed corn-soybean meal diets to achieve a matrix of
Lys (15 to 45 g/d) and ME (6.5 to 16.5 Mcal/d) intakes. Milk yield was measured for a 24-h period from d 8 to 9 and d 22 to 23 via deuterium dilution. Milk samples were
collected and analyzed for protein, fat, lactose and energy to determine total milk component
yield/d. Mean values (SD) for each milk component for d 22 were: Yield 9.481 (1.268) g/d; protein 487 (54) g/d; fat 603 (108) g/d; lactose 521 (77) g/d and energy 10.333 (1.522)
Mcal/d. Circulating levels of glucose, amino acids, triglycerides, nonesterified fatty acids
and adenine triphosphate were also measured. Regression parameters and R2 for each model
predicting yield of milk components for d 22 from Lys and ME intake are listed in the table.
A significant (P < 0.05) interaction (LysxME) was observed for all models except lactose, demonstrating
that Lys intake needed to maximize milk production increased markedly as ME intake increased.
Lys and ME intake explained a smaller portion of the variability in milk component yield on
8 (R2 = 0.51) than on d 22, evidence that dietary influences on milk production increase as
lactation progresses. Regression analysis revealed strong connections between diet and
milk concentration on d 22 (R2 = 0.5 to 0.7), but no obvious relationships between
precursor metabolite concentrations and milk component yield (R2 = 0.1 to
1.0). In conclusion, these results show that the moderate effects of Lys and ME intake on yield of milk components.
These effects do not appear to be directly associated with changes in precursor pool concentrations.

Table:
<table>
<thead>
<tr>
<th>Item</th>
<th>Intercept</th>
<th>Lys</th>
<th>Lys²</th>
<th>ME</th>
<th>ME²</th>
<th>LysxME</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>6,803.6</td>
<td>73.67</td>
<td>-64.49</td>
<td>-4.37</td>
<td>-4.63</td>
<td>21.74</td>
<td>.74</td>
</tr>
<tr>
<td>Protein</td>
<td>301.9</td>
<td>13.41</td>
<td>-12.39</td>
<td>-3.36</td>
<td>-3.37</td>
<td>1.10</td>
<td>.78</td>
</tr>
<tr>
<td>Fat</td>
<td>660.3</td>
<td>7.68</td>
<td>-53.83</td>
<td>-3.39</td>
<td>-3.32</td>
<td>2.05</td>
<td>.64</td>
</tr>
<tr>
<td>Lactose</td>
<td>274.4</td>
<td>2.88</td>
<td>10.69</td>
<td>-1.18</td>
<td>-2.35</td>
<td>.95</td>
<td>.73</td>
</tr>
<tr>
<td>Energy</td>
<td>8,994.2</td>
<td>148.90</td>
<td>-500.47</td>
<td>-6.28</td>
<td>-7.11</td>
<td>29.19</td>
<td>.69</td>
</tr>
</tbody>
</table>

KEYWORDS: Milk production, Lactating sow, Nutrition

Feeding regimen during gestation affects feed intake and feeding behavior of primiparous sows
University of Nebraska, Lincoln.

The voluntary feed intake of primiparous sows during early lactation is frequently inadequate to support
ilk production and prevent excessive weight loss. To investigate the relationship between feeding
riment during gestation and feed intake during lactation, 15 crossbred, primiparous sows were
signed to two dietary treatments. From d 60 of gestation to farrowing, the intake of eight sows was
stricted to 1.85 kg/d (R) while seven sows were allowed to eat ad libitum (AI). During a 28-d
ation, litter size was standardized to 10 pigs, and all sows were given ad libitum access to feed.
ily intake was measured throughout gestation and lactation, and on d 105 of gestation and d 1, 7,
1 and 21 of lactation the time and quantity of each meal consumed were recorded. During
ation period, total feed intake of R sows was less than that of AL sows (73.7 vs 148.8 kg; < .001), but feed intake of the AL group decreased quadratically (P < .01) as gestation progressed.
uring lactation, R sows ate more than AL sows (151.9 vs 79.2 kg; P < .001). Feed intake of both