Effect of UVB-light on Vitamin D status in piglets

CPH pig 29th of January 2019.

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Summary

• PigLED

• Vitamin D

• Pilotstudy
My work
Vitamin D

7-dehydrocholesterol is produced in the body and is present in the epidermis of the skin

7-dehydrocholesterol

UVB irradiation

Vitamin D₃

Liver microsomes

25-hydroxyvitamin D₃ (25(OH)D₃)

Mitochondria in kidney

1,25 dihydroxyvitamin D₃

Precursor for vitamin D

Dietary uptake possible

Biomarker for vitamin D status

Active form
The pilot study

- **Pilot** total of 15 sows
  - Compare daily weight gain and vitamin D status in piglets in two groups exposed to different doses of UVB light to an unexposed control group.
Materials and methods

• The herd
  • SPF+Myc+Ap2+Ap12
  • LY sows
  • Liquid feeding, no use of HyD.
  • Ad libitum milk + feed supplementation for piglets.
Set up

- 15 sows in total, divided between two rooms
- UV light on from day 2
- Litters fixed on day 1

Pilot study

- Control: 5 sows, 65 piglets
- 0.7 SED: 5 sows, 65 piglets
- 1.0 SED: 5 sows, 65 piglets
Sampling

- Piglets were born between the 1\textsuperscript{st} and 5\textsuperscript{th} of June 2018
- Selection of piglets and first sampling was performed within the first 24 hours after farrowing.

- Day 1: Weight, Blood samples
- Day 12: Blood samples
- Day 24: Weight, Blood samples
Results

- 195 piglets on day 1
- 177 piglets at weaning

Piglets moved from sows

- Dead 5%
- Skinny 3%
- Unknown 1%
- Weaning 91%
Results

<table>
<thead>
<tr>
<th>Group</th>
<th>Control</th>
<th>0.7 SED</th>
<th>1.0 SED</th>
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</thead>
<tbody>
<tr>
<td>No of pigs</td>
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<td>2</td>
<td>10</td>
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<table>
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<tr>
<th>Group</th>
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<th>1.0 SED</th>
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</thead>
<tbody>
<tr>
<td>No of pigs</td>
<td>0</td>
<td>1</td>
<td>6</td>
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</table>
25-hydroxyvitamin D$_3$

- Results presented at CPH Pig
25-hydroxyvitamin D$_3$

- Results presented at CPH Pig
Results

Birthweight

<table>
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<tr>
<th>Group</th>
<th>Grams</th>
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<tbody>
<tr>
<td>Control</td>
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<tr>
<td>0.7 SED</td>
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<tr>
<td>1.0 SED</td>
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Weaning weight

<table>
<thead>
<tr>
<th>Group</th>
<th>Grams</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>0.7 SED</td>
<td></td>
</tr>
<tr>
<td>1.0 SED</td>
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</tbody>
</table>
Results

Weightgain in percentage of birthweight, with P-values
Conclusion

• Significant difference in vitamin D$_3$ between control group and the two groups receiving UVB light

• No significant difference in weight gain

• No significant difference in vitamin D$_3$ between groups receiving different doses of UVB light.
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Thank You for your attention