EFFECTS OF PROTEIN SOURCES IN CALF STARTER ON HEALTH-RELATED PARAMETERS IN PLASMA

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ABOUT SOY PRODUCTS

Soybean products are the preferred choice of protein source

- High protein content (~40% CP on DM-basis)
- Highly palatable

Soybeans contain anti-nutritional factors

- Protease inhibitors
- Lectins
- Oligosaccharides
- Storage globulins
- Phytates

PROBLEMS RELATED TO SOYBEAN MEAL

Soybean meal as compared to highly processed soy products:

- Increased passage rate of digesta
  - Reduced digestibility
- Growth depression
- Altered morphology of intestinal epithelium
- Induce hypersensitivity responses

OBJECTIVE

To compared two pelleted calf starters containing either soybean meal (SBM) or soy protein concentrate (SPC) on:

- Solid feed intake
- Live weight
- Average daily gain
- Faecal scores
- Levels of selected blood traits

of small calves during the pre-weaning period and 2 weeks post-weaning.

HYPOTHESES

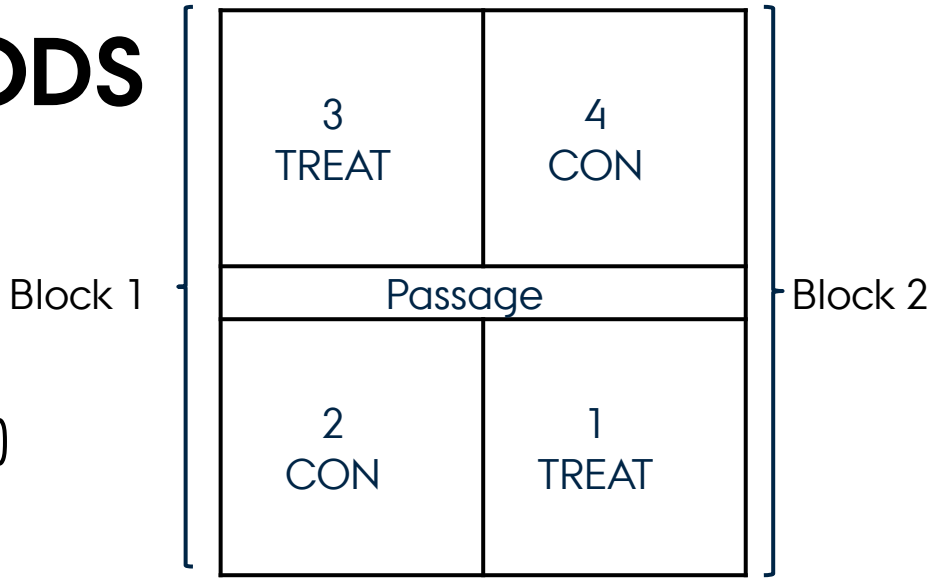
Soy protein concentrate was expected to:

- Improve solid feed intake and average daily gain
- Result in better faecal scores
- Alleviate pro-inflammatory responses

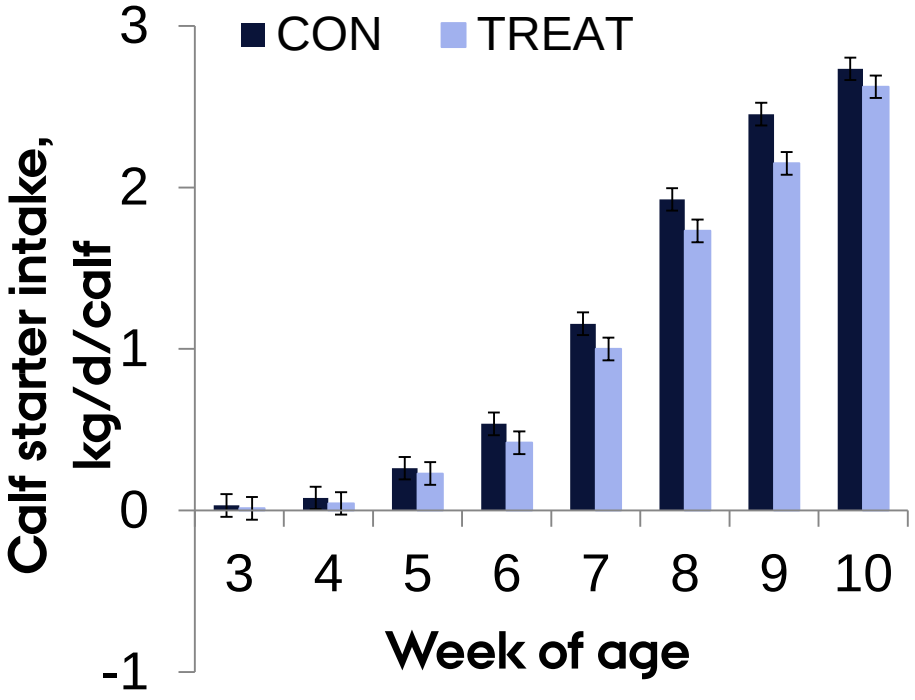
, when compared with soybean meal

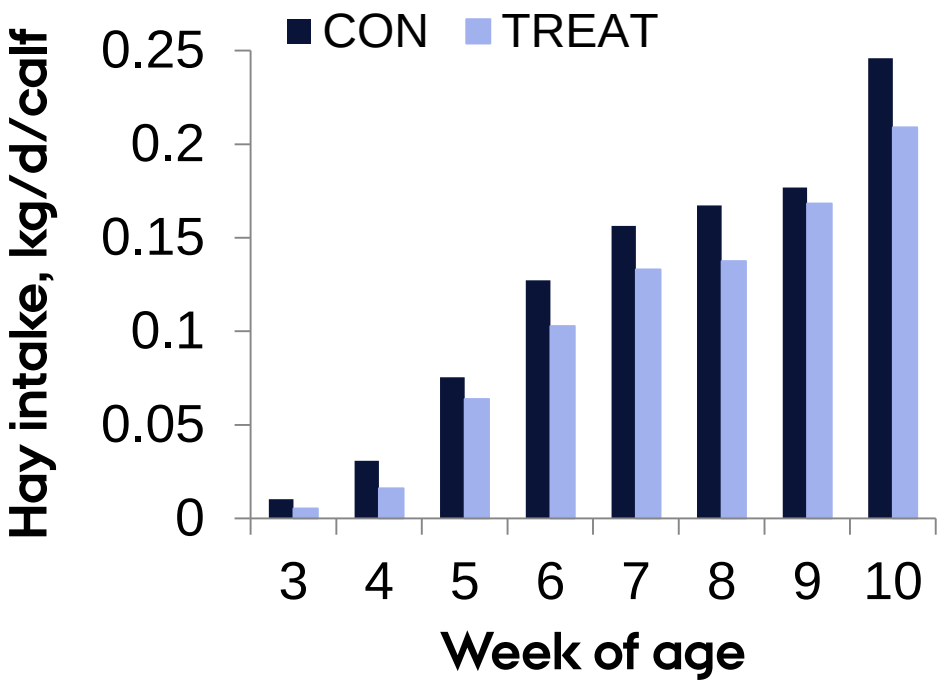
MATERIALS & METHODS

- 32 calves
  - 2 blocks
  - CON vs. TREAT (SBM vs. SPC)
- 2-10 weeks of age
  - Weaned at 8 weeks of age
- All measures on calf level
- Feed intake on pen-level
- 12-43 weeks:
  - Similar fed
  - Housed in 2 mixed groups

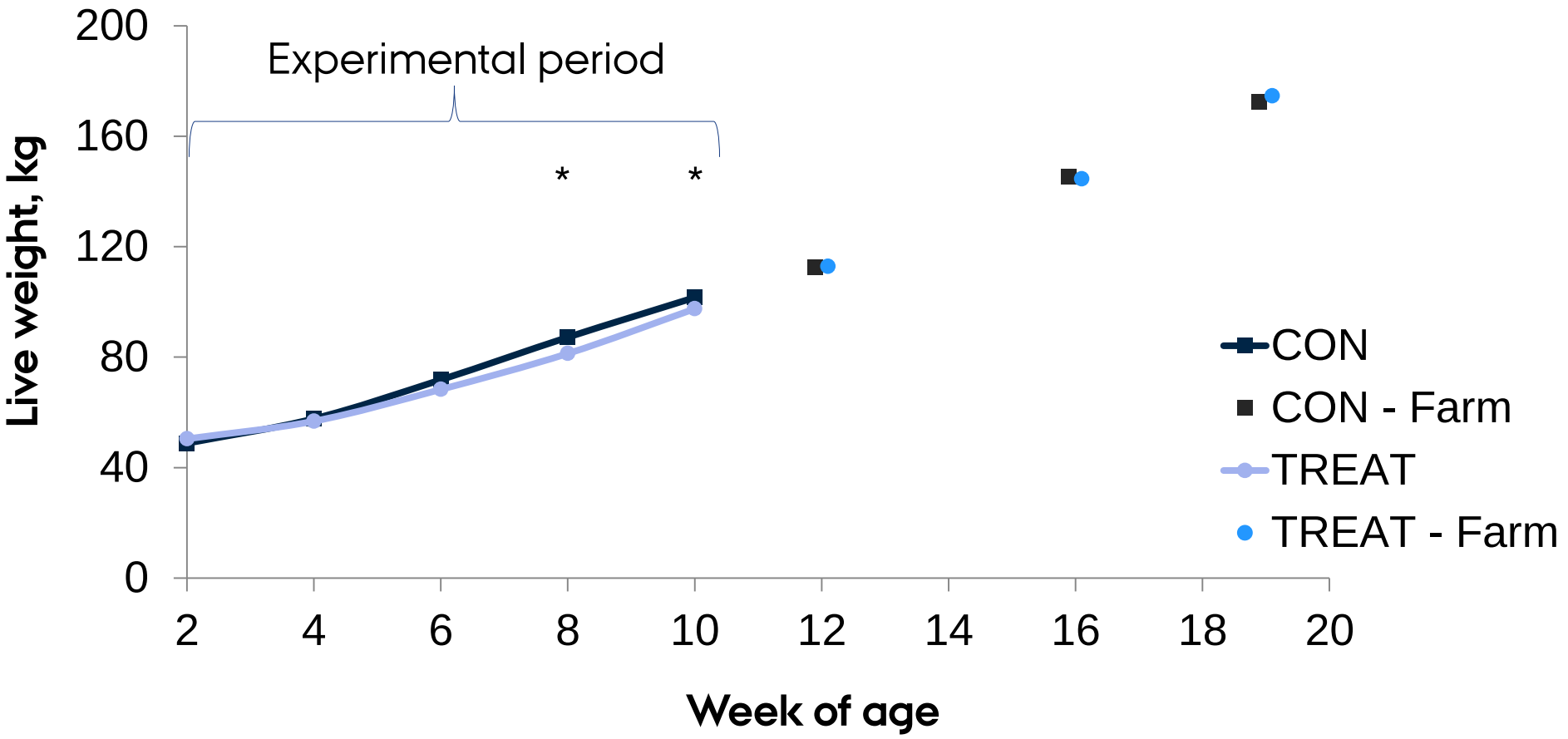


RESULTS – FEED INTAKE

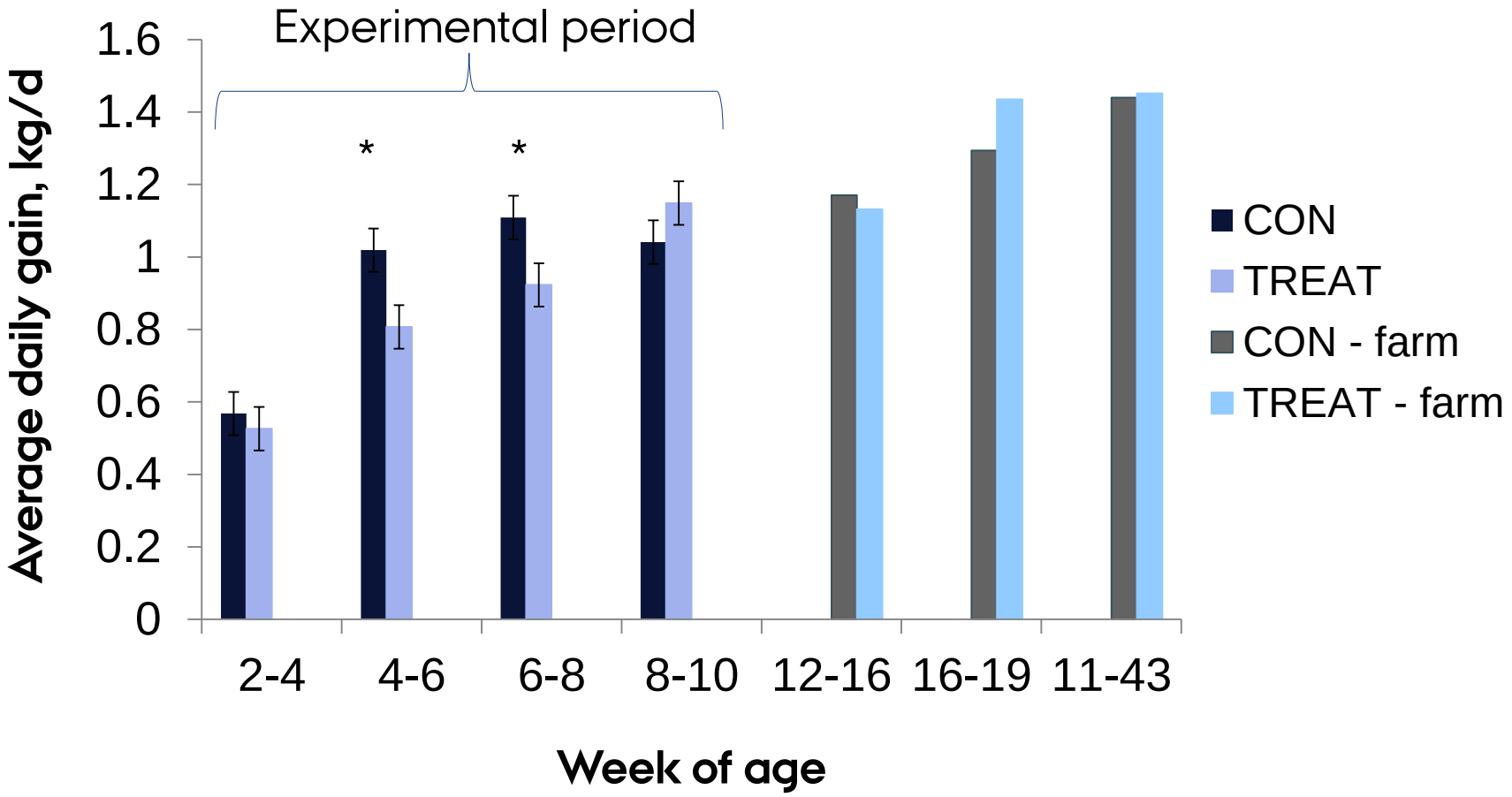




RESULTS – LIVE WEIGHT



RESULTS – AVERAGE DAILY GAIN



RESULTS - LONG-TERM

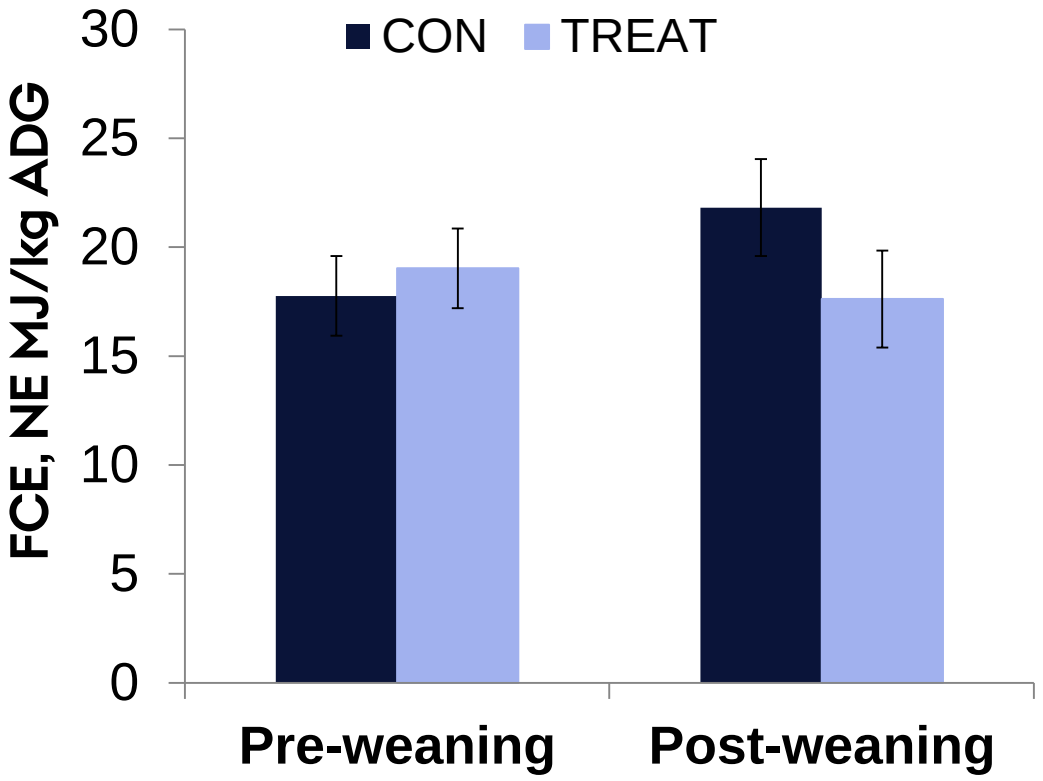
230 days at farm	CON	TREAT	Difference
LW at arrival at farm, kg	104	99	-4.8%
LW at slaughter, kg	435	433	-0.5%
Carcass weight, kg	226	227	0.4%
ADG, g/d	1,440	1,452	0.8%
Net ADG, g/d	673	677	0.6%

RESULTS – FEED CONVERSION EFFICIENCY

Post-weaning:

- TreatxTime: $P < 0.05$

- CON less efficient than TREAT

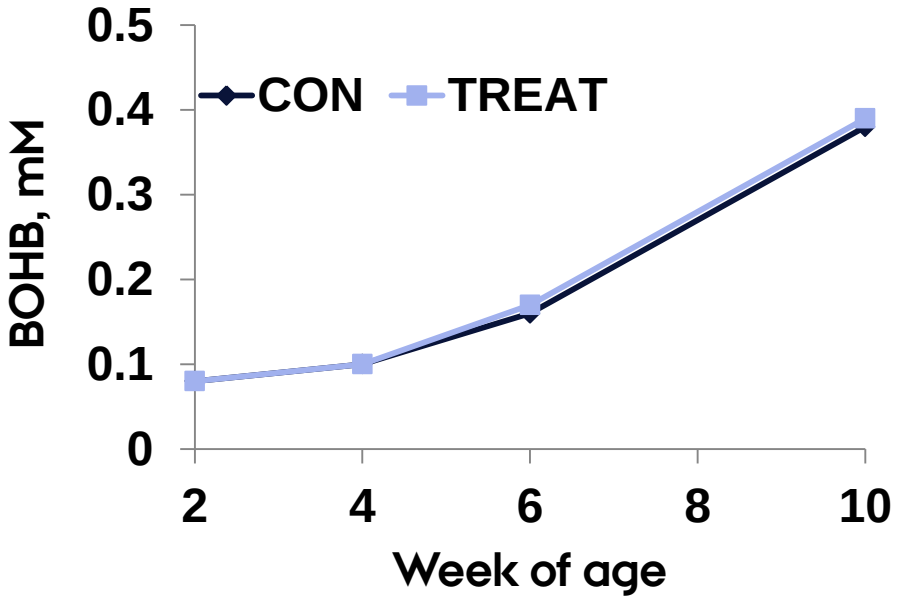


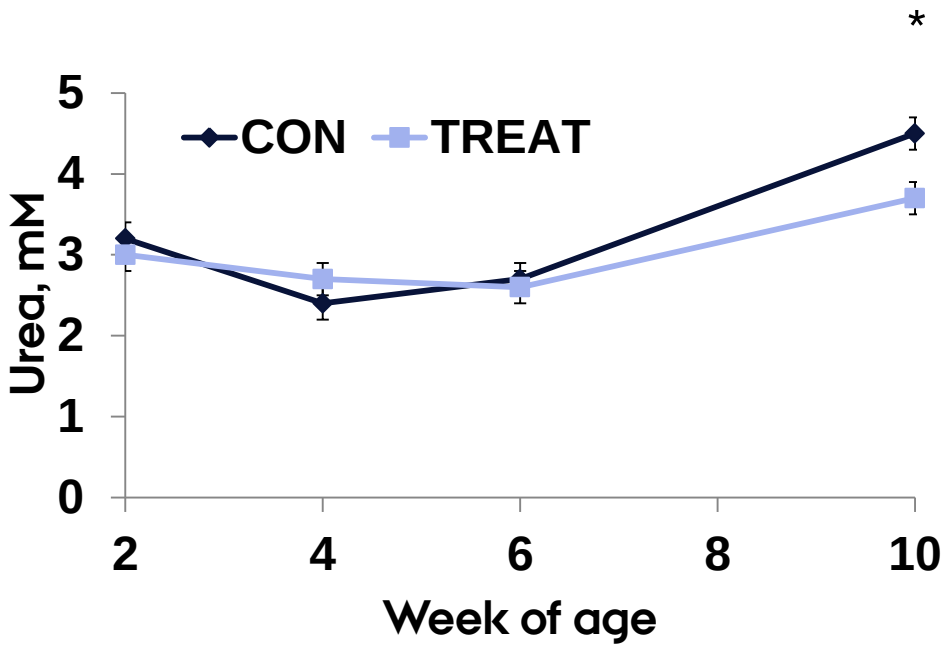
RESULTS - BLOOD

No effect of treatment on:

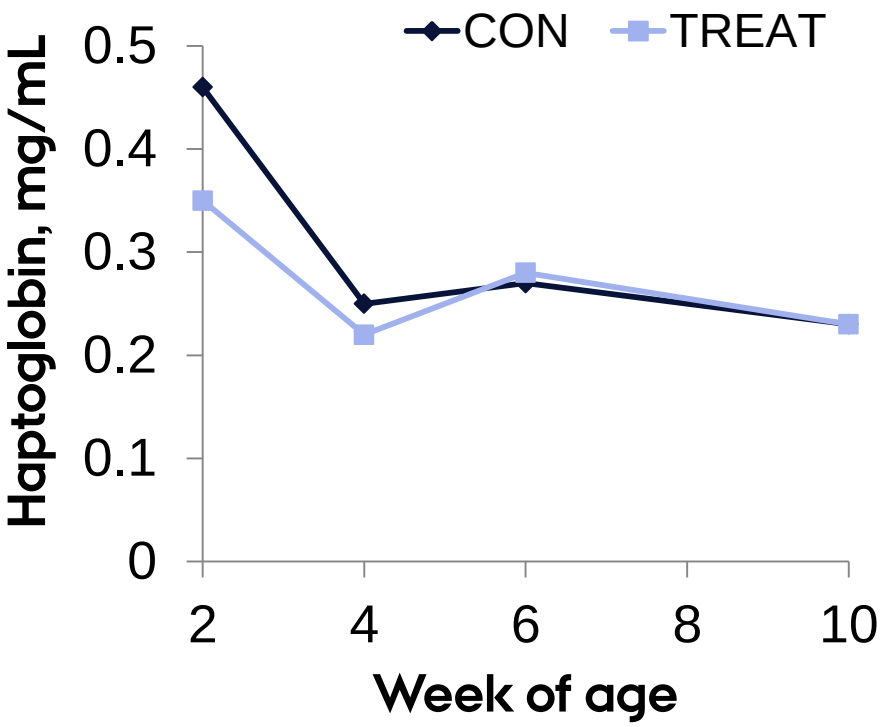
- Glucose
- NEFA
- Total protein, albumin
- IgG, IgA, IgM
- Serum amyloid A
- α-2-macroglobulin

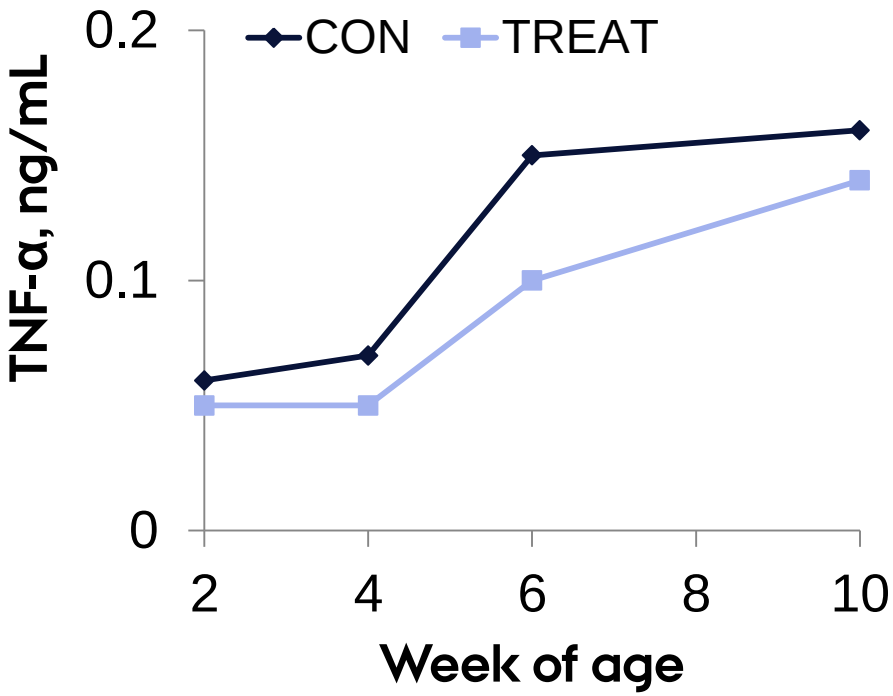
RESULTS - BLOOD





RESULTS - BLOOD





RESULTS – FAECAL SCORES

No effect of treatment on faecal consistency or –colour

Hindquarters score:

- TREAT had lower odds than CON at 10 weeks of age
- Due to oligosaccharide content in CON calf starter

CONCLUSIONS

- SPC did not improve solid feed intake or average daily gain
  - Different health status at 4-6 weeks of age (feed intake and slightly looser faeces at this stage in TREAT)

- SPC did not alleviate pro-inflammatory responses as studied by these blood parameters

- SPC improved hindquarters score, but not faecal consistency or faecal colour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