



# Dietary Betaine Supplementation Enhances Colonic Barrier Function Through the Nrf2/Keap1 and TLR4-NF-KB/MAPK Signaling Pathways and Alters Colonic Microbiota in Bama Mini-Pigs

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**Table S1.** Composition and nutrient levels of basal diets for sows (air-dry basis; %)

Items	Pregnant diet	Lactating diet
Ingredients		
Corn	37.50	66.00
Soybean meal	9.50	25.00
Wheat bran	14.00	5.00
Barley	25.00	
Soybean hull	10.00	
Pregnant premix <sup>1</sup>	4.00	
Lactating premix <sup>2</sup>		4.00
Total	100.00	100.00
Nutrient levels <sup>3)</sup>		
Digestible energy (MJ/Kg)	12.55	13.87
Crude protein	12.82	16.30
Crude fiber	4.56	2.87
SID <sup>4)</sup> Lys	0.48	0.75
SID Met+ Cys	0.43	0.51
SID Thr	0.37	0.53
SID Trp	0.13	0.17
Calcium	0.62	0.65
Phosphorus	0.47	0.50

<sup>1)</sup> Pregnant premix provided the following per kg of diet: CaHPO<sub>4</sub>·2H<sub>2</sub>O 10 g, NaCl 4 g, CuSO<sub>4</sub>·5H<sub>2</sub>O 80 mg, FeSO<sub>4</sub>·H<sub>2</sub>O 360 mg, ZnSO<sub>4</sub>·H<sub>2</sub>O 240 mg, MnSO<sub>4</sub>·H<sub>2</sub>O 100 mg, MgSO<sub>4</sub>·7H<sub>2</sub>O 1 g, 1% ICl 50 mg, 1% Na<sub>2</sub>SeO<sub>3</sub> 36 mg, 1% CoCl<sub>2</sub> 16 mg, NaHCO<sub>3</sub> 1.4 g, VA 10 000 IU, VD<sub>3</sub> 1 800 IU, VE 20 mg, VK<sub>3</sub> 2.4 mg, VB<sub>1</sub> 1.6 mg, VB<sub>2</sub> 6 mg, VB<sub>6</sub> 1.6 mg, VB<sub>12</sub> 0.024 mg, folic acid 1.2 mg, nicotinamide 20 mg, pantothenic acid 12 mg, biotin 0.12 mg, ferrous glycinate 100 mg, choline chloride 1g, phytase 200 mg, fruity 80 mg, and limestone 12 g.

<sup>2)</sup> Lactating premix provided the following per kg of the diet: CaHPO<sub>4</sub>·2H<sub>2</sub>O 10 g, NaCl 4 g, CuSO<sub>4</sub>·5H<sub>2</sub>O 80 mg, FeSO<sub>4</sub>·H<sub>2</sub>O 360 mg, ZnSO<sub>4</sub>·H<sub>2</sub>O 240 mg, MnSO<sub>4</sub>·H<sub>2</sub>O 100 mg, 1% ICl 50 mg, 1% Na<sub>2</sub>SeO<sub>3</sub> 36 mg, 1% CoCl<sub>2</sub> 16 mg, NaHCO<sub>3</sub> 1.4 g, VA 10 000 IU, VD<sub>3</sub> 1 800 IU, VE 20 mg, VK<sub>3</sub> 2.4 mg, VB<sub>1</sub> 1.6 mg, VB<sub>2</sub> 6 mg, VB<sub>6</sub> 1.6 mg, VB<sub>12</sub> 0.024 mg, folic acid 1.2 mg, nicotinamide 20 mg, pantothenic acid 12 mg, biotin 0.12 mg, Lysine 1.5 g, ferrous glycinate 100 mg, choline chloride 1g, phytase 200 mg, fruity 80 mg, limestone 12 g.

<sup>3)</sup> Nutrient levels were calculated values.

<sup>4)</sup> SID: standard ileum digestible.

**Table S2.** Composition and nutrient levels of basal diets for weaned offspring Bama mini-pigs (air-dry basis; %)

Items	Prophase diet (28–60 d-old)	Anaphase diet (60–90 d-old)
Ingredients		
Corn	54.92	58.00
Soybean meal	22.00	18.35

Wheat bran	10.13	11.35
Rice bran	8.95	8.30
Premix <sup>1)</sup>	4.00	4.00
Total	100.00	100.00
Nutrient levels <sup>2)</sup>		
Digestible energy (MJ/kg)	13.50	13.42
Crude protein	16.13	14.90
Calcium	0.45	0.44
Total Phosphorus	0.49	0.49
Lys	1.40	1.30
Met + Cys	0.69	0.66
Thr	0.78	0.74

<sup>1)</sup> Premix provided the following per kilogram of diets: enzyme preparation (including phytase, protease, and lipase) 1.2 g, VA 26 000 IU, VD<sub>3</sub> 10 000 IU, VE 70 IU, VK<sub>3</sub> 10 mg, VB<sub>1</sub> 10 mg, VB<sub>2</sub> 25 mg, VB<sub>6</sub> 10 mg, VB<sub>12</sub> 0.075 mg, biotin 0.4 mg, folic acid 5 mg, nicotinamide 100 mg, pantothenic 50 mg, choline 1600 mg, flavoring agent 500 mg, edulcorant 300 mg, acidulating agent 5 g, CuSO<sub>4</sub>·5H<sub>2</sub>O 898 mg, MnSO<sub>4</sub>·H<sub>2</sub>O 298 mg, ZnSO<sub>4</sub>·H<sub>2</sub>O 600 mg, FeSO<sub>4</sub>·H<sub>2</sub>O 501 mg, Ca(IO<sub>3</sub>)<sub>2</sub> 0.9 mg, as Na<sub>2</sub>SeO<sub>3</sub> 0.7 mg, CoSO<sub>4</sub>·H<sub>2</sub>O 1.2 mg, glucose 2.1 g, antioxidants 0.4 g, anti-mildew agent 1 g, Ca (as CaHPO<sub>4</sub> and CaCO<sub>3</sub>) 3.42 g, and P (as CaHPO<sub>4</sub>) 1.155 g.

<sup>2)</sup> Nutrient levels were calculated values.