

**Supplementary Table 1.** Ingredient and nutrient composition of the experimental diets

	Cellulose, CEL	Psyllium, PSY	Kiwifruit, KF
Ingredients g/kg DM			
CEL <sup>1</sup>	45	23	23
PSY <sup>1</sup>	-	24	-
KF dry matter <sup>1,2</sup>	-	-	110
Wheat starch	522	519	482
Lactic casein	210	210	205
Sucrose	141	141	102
Soya oil	50	50	46
Dicalcium phosphate	20	20	20
Sodium chloride	3	3	3
Calcium carbonate	1	1	1
Vitamin/mineral mix <sup>3</sup>	5	5	5
Titanium dioxide	3	3	3
Nutrient, g/kg DM (determined values)			
Ash	35	36	39
Total fat	48	49	51
Total starch	405	417	431
Titanium dioxide	3	3	3
Total dietary fiber	45	45	44
Insoluble dietary fiber <sup>4</sup>	45	24	34
Soluble dietary fiber <sup>4</sup>	0	21	10
Crude protein	175	178	198
Total sugars	121	123	132
Gross energy, MJ/kg	17.4	17.4	18.2

<sup>1</sup> The content of total dietary fiber was 100, 91, and 19% for CEL, PSY and KF pulp respectively.

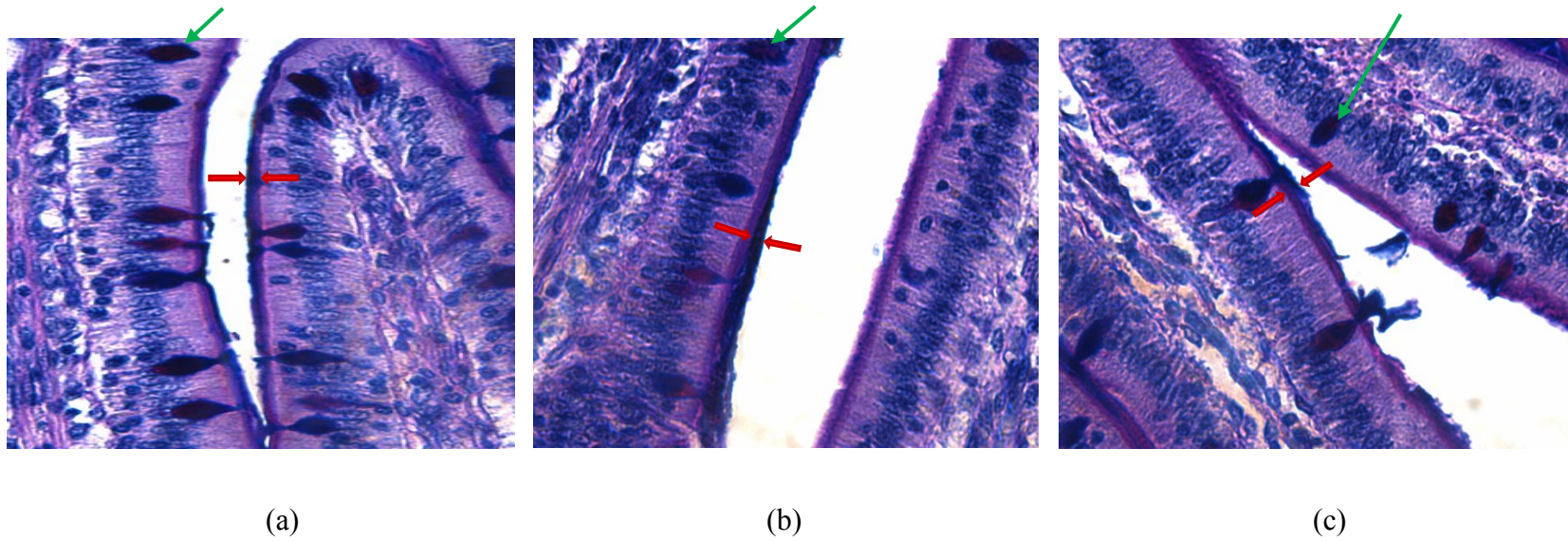
<sup>2</sup> Freshly peeled and crushed KF were added to the diet immediately prior to feeding.

<sup>3</sup> Vitamin and mineral premixes were obtained from Vittec Nutrition Ltd (Auckland, New Zealand) and supplied (per kg of diet as-fed): Mn, 45 mg; Zn, 80 mg; Cu, 25 mg; Co, 0.5 mg; Se, 0.3 mg; Fe, 100 mg; I, 1.0 mg; Choline, 100 mg; all-trans retinylacetate, 3.0 mg; cholecalciferol, 0.05 mg;  $\alpha$ -tocopherol, 50 mg; menadione, 2.0 mg; thiamin, 1.0 mg; riboflavin, 3.0 mg; nicotinic acid, 15 mg; pantothenic acid, 20 mg; pyridoxine, 2.0 mg; cyanocobalamin, 0.01 mg; folic acid, 0.5 mg; biotin, 0.1 mg.

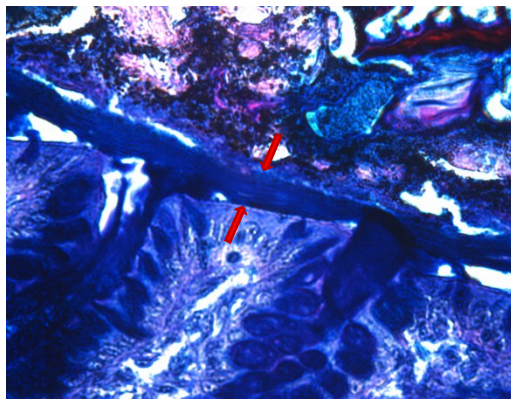
<sup>4</sup> Calculated values based on reported percentages of soluble dietary fiber in PSY (85%)<sup>1</sup> and KF (47%)<sup>2</sup>.

## References

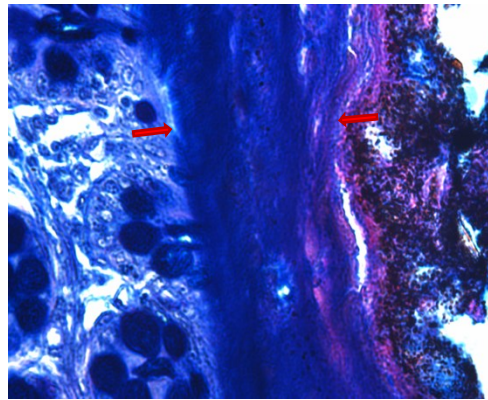
1. B. H. D. Luccia and M. E. Kunkel, In vitro availability of calcium from sources of cellulose, methylcellulose, and psyllium, *Food Chem*, 2002, **77**, 139-146.
2. H. N. Englyst, S. A. Bingham, S. A. Runswick, E. Collinson and J. H. Cummings, Dietary fibre (non-starch polysaccharides) in fruit, vegetables and nuts, *J. Hum. Nutr. Diet.*, 1988, **1**, 247-286.



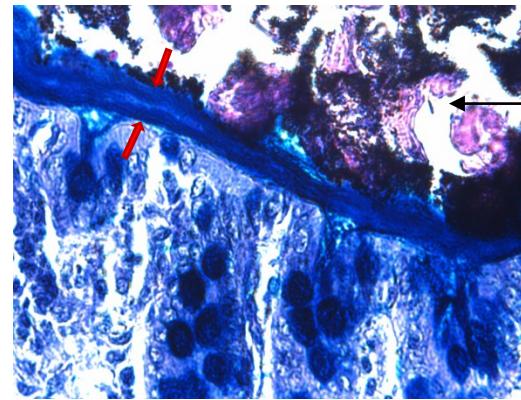
**Supplementary Figure 1.** Light micrographs of the mucus layer (dark blue stain) lining the jejunal villi and the mucus-filled goblet cells (indicated by green arrows) of growing pigs fed cellulose (a), psyllium (b) or kiwifruit (c) containing diets for 42 days. Micrographs were stained with Periodic Acid Schiff / Alcian Blue. Magnification is 100x. The red arrows indicate the thickness of the mucus layer.



(a)



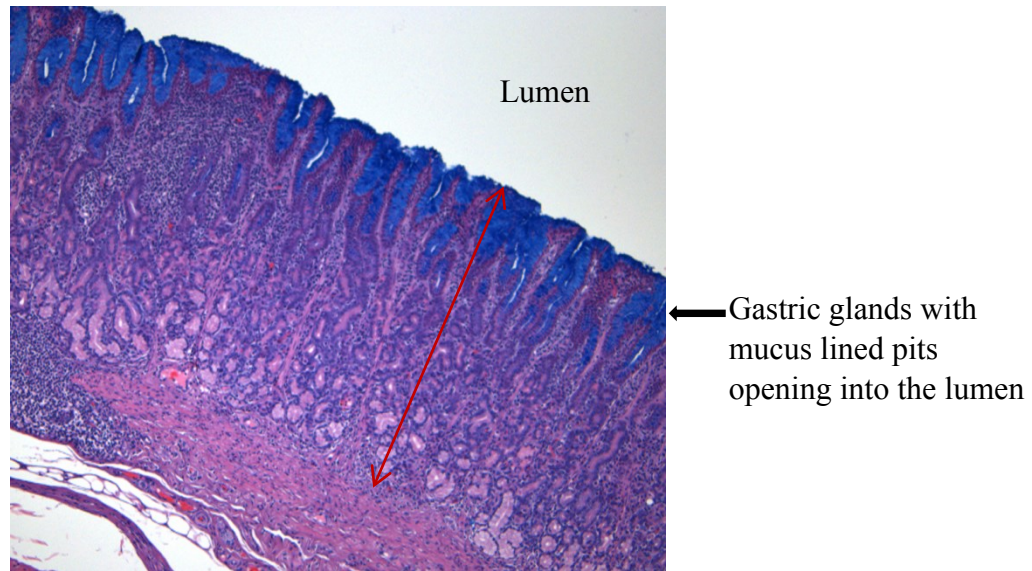
(b)



(c)

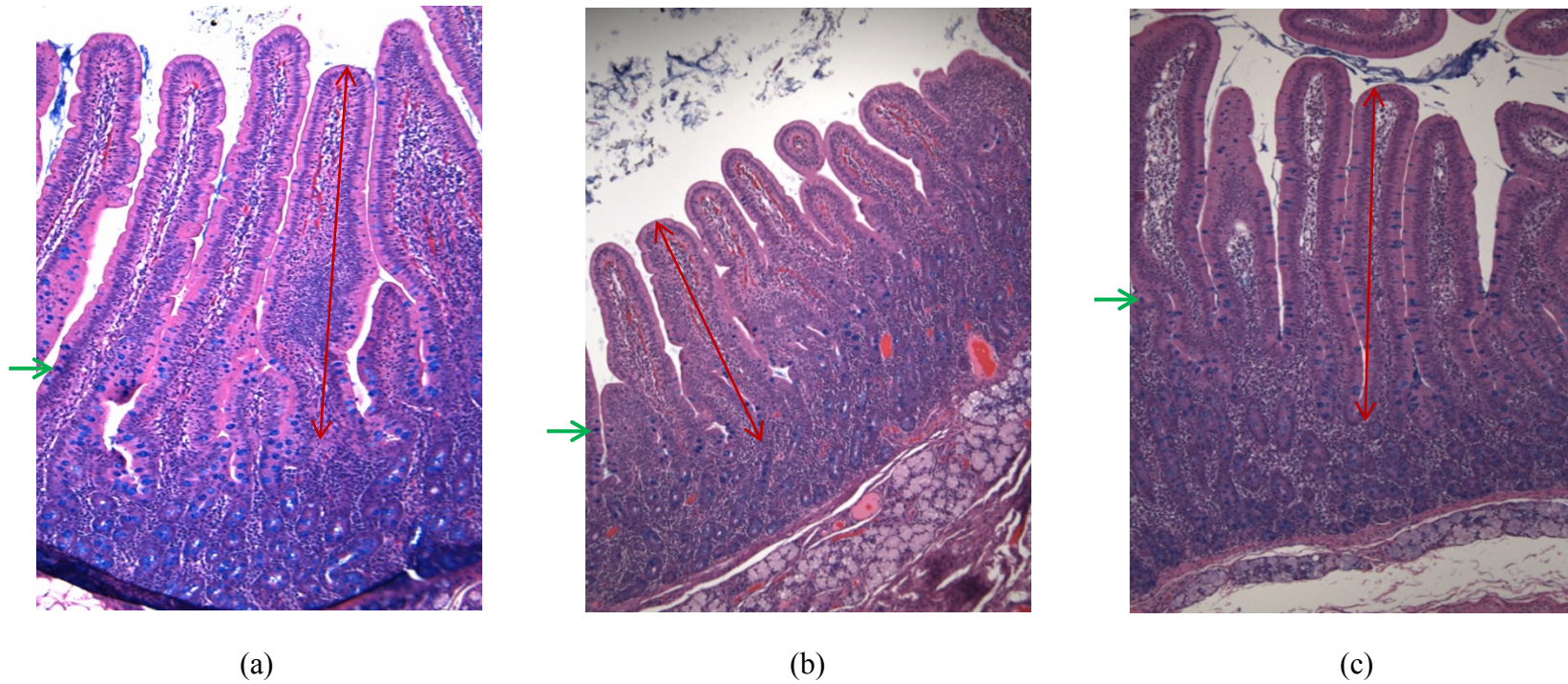
Lumen with  
digesta

**Supplementary Figure 2.** Light micrographs of the mucus layer (dark blue stain) lining the colonic crypts and the mucus-filled goblet cells of growing pigs fed cellulose (a), psyllium (b) or kiwifruit (c) containing diets for 42 days. Micrographs were stained with Periodic Acid Schiff / Alcian Blue. Magnification is 100x. The red arrows indicate the thickness of the mucus layer.

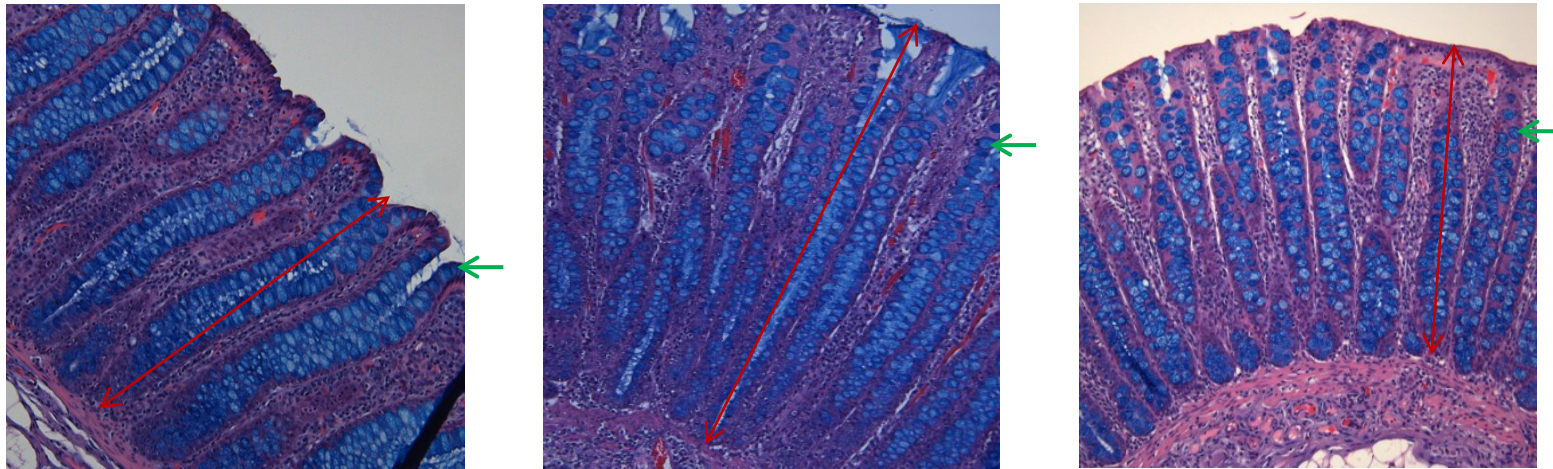


**Supplementary Figure 3.** Light micrograph of the gastric glands with mucus lined pits stained blue of growing pigs fed a kiwifruit containing diet for 42 days. The micrograph was stained with Haematoxylin and Eosin, and Alcian Blue. Magnification is 10x. The red arrow indicates the depth of the gastric gland from the epithelium lining the lumen to the smooth muscle of the submucosa.





**Supplementary Figure 4.** Light micrographs of the duodenal villi containing mucus filled goblet cells (indicated by green arrows) of growing pigs fed cellulose (a), psyllium (b) or kiwifruit (c) containing diets for 42 days. Micrographs were stained with Haematoxylin and Eosin, and Alcian Blue. Magnification is 10x. The red arrows indicate the height of the villi from the epithelium at the luminal surface to the surface of the crypts.



(a)

(b)

(c)

**Supplementary Figure 5.** Light micrographs of the colonic crypts containing mucus filled goblet cells (indicated by green arrows) of growing pigs fed cellulose (a), psyllium (b) or kiwifruit (c) containing diets for 42 days. Micrographs were stained with Haematoxylin and Eosin, and Alcian Blue. Magnification is 20x. The red arrows indicate the depth of the colonic crypt from the epithelium at the luminal surface to the connective tissue/smooth muscle layer of the underlying submucosa.