

## Supplementary materials

### **Selenium supplementation protects against oxidative stress-induced cardiomyocyte cell cycle arrest through activation of PI3K/AKT**

Wenjuan Sun<sup>1,2</sup>, Jiawei Zhu<sup>1,2</sup>, Shuang Li<sup>1,2</sup>, Chaohua Tang<sup>1,2</sup>, Qingyu Zhao<sup>1,2</sup>, Junmin Zhang<sup>1,2\*</sup>

<sup>1</sup> State Key Laboratory of Animal Nutrition, Institute of Animal Sciences of Chinese Academy of Agricultural Sciences, Beijing 100193, China, [ias@caas.cn](mailto:ias@caas.cn)

<sup>2</sup> Scientific Observing and Experiment Station of Animal Genetic Resources and Nutrition in North China of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences of Chinese Academy of Agricultural Sciences, Beijing 100193, China, [ias@caas.cn](mailto:ias@caas.cn)

\*Correspondence: [zhjmxms@sina.com](mailto:zhjmxms@sina.com);

---

**Table s1.** Information about the primary antibodies used for the western blot experiment.

Antibody for	Company and Cat. #	Source	Reactivity	Dilution
GAPDH	CST, #2118	Ra. mono.	H./M./R./etc.	1:5000
PTEN	CST, #9188	Ra. mono.	H./M./R./etc.	1:1000
PI3Kp85	Abclonal, A11177	Ra. poly.	H./M./R.	1:500
AKT	Abclonal, A11016	Ra. poly.	H./M./R.	1:500
pAKT	Abclonal, AP0140	Ra. poly.	H./M./R./etc.	1:500
AKT	CST, 9272	Ra. poly.	H./M./R./Pg./etc.	1:1000
pAKT	CST, 9271	Ra. poly.	H./M./R./Pg./etc.	1:1000
GSK3 $\beta$	Abclonal, A16868	Ra. poly.	H./M./R./etc.	1:1000
pGSK3 $\beta$	Abclonal, AP0039	Ra. poly.	H./M./R./P/etc.	1:500
CDK1	Abclonal, A0020	Ra. poly.	H./M./R.	1:1000

H.: human; M.: mouse; R.: rat; Ra.: rabbit; Pg.: Pig; mono. : monoclonal; poly.: polyclonal.

**Table s2. Ingredients and nutrient composition of the basal diet for pigs[1].**

Item	Starter (weight < 25 kg <sup>a</sup> )	Grower (weight > 25 kg <sup>b</sup> )
Ingredients, %		
Maize	66	74.7
Soybean meal	26.2	20
Soybean oil	3.6	1.6
Sodium chloride	0.5	0.3
Limestone	0.9	0.9
Dicalcium phosphate	1	0.9
Lysine (%)	0.8	0.6
Premix <sup>1</sup>	1	1
Digestible energy (Kcal /kg)	3493.28	3405.15
Crude protein (%)	15.88	14.17
Calcium (%)	0.71	0.67
Available phosphorus (%)	0.29	0.27
Lysine (%)	1.23	0.98
Methionine (%)	0.36	0.28
Threonine (%)	0.73	0.59
Tryptophan (%)	0.20	0.17

<sup>1</sup>Premix provided (per kg feed): Cu (5 mg<sup>a</sup>, 4 mg<sup>b</sup>), I (0.14 mg<sup>a,b</sup>), Fe (100 mg<sup>a</sup>, 60 mg<sup>b</sup>), Mn (3 mg<sup>a</sup>, 2 mg<sup>b</sup>), Zn (80 mg<sup>a</sup>, 60 mg<sup>b</sup>), vitamin A (1750 IU<sup>a</sup>, 1300 IU<sup>b</sup>), vitamin D<sub>3</sub> (200 IU<sup>a</sup>, 150 IU<sup>b</sup>), vitamin E (11 IU<sup>a,b</sup>), vitamin K<sub>3</sub> (0.5 mg<sup>a,b</sup>), biotin (0.05 mg<sup>a,b</sup>), choline (0.4 g<sup>a</sup>, 0.3 g<sup>b</sup>), folic acid (0.3 mg<sup>a,b</sup>), niacin (30 mg<sup>a,b</sup>), d-pantothenic acid (9 mg<sup>a</sup>, 8 mg<sup>b</sup>), vitamin B<sub>1</sub> (1 mg<sup>a,b</sup>), vitamin B<sub>2</sub> (3 mg<sup>a</sup>, 2.5 mg<sup>b</sup>), vitamin B<sub>6</sub> (3 mg<sup>a</sup>, 1 mg<sup>b</sup>), and vitamin B<sub>12</sub> (15 µg<sup>a</sup>, 10 µg<sup>b</sup>).

#### Reference

1. C. Tang, S. Li, K. Zhang, J. Li, Y. Han, T. Zhan, Q. Zhao, X. Guo and J. Zhang, Selenium deficiency-induced redox imbalance leads to metabolic reprogramming and inflammation in the liver, *Redox Biol.*, 2020, 101519.

**Table s3.** List of the primer sequences used for RT-qPCR analysis.

Gene Name	Accession number	Primer (5'→ 3')	product size (bp)	Tm (°C)
<i>P21</i> (R.)	NM_031515	F: AGTGCCTTGACGATACAGCT R: AAAGAAAGCCCTCCCCAGTT3	190	60
<i>CDK1</i> (R.)	NM_019296.1	F:AGTTCATGGATTCTTCGCTCGTT R:CTGCCAGTTTGATTGTTCCTTTG	144	60
<i>CDK2</i> (R.)	NM_199501.1	F: CCAGGAGTTACTTCTATGCC R:GCTGAAATCCGCTTGTT	149	60
<i>CDK4</i> (R.)	NM_053593.2	F: CTGTGGTTGTTACGCTCTGG R:CTTCCGGCGAAACATCTCTG	116	60
<i>CCNB1</i> (R.)	NM_171991.3	F: ATTGCAGCTGGGGCTTTTTG R: AGAGATTCTCCGTGTGGGA	94	60
<i>Actb</i> (R.)	NM_031144.3	CCAACCGTGAAAAGATGACCCAGAT TAACCCTCATAGATGGGCACAGTGT	166	60
<i>GAPDH</i> (R.)	NM_017008.4	F: ATCACCATCTTCCAGGAGCGA R:ACGCCAGTAGACTCCACGACA	83	60
<i>p21</i> (Pg.)	XM_013977858.2	F:ACCCCTTCCCCATACCC R:TTCCTAACACCCATGAAACTG	247	60
<i>CDK1</i> (Pg.)	NM_001159304.2	F:CAGCTCGCTACTCAACTCCA R:GAGTGCCCAAAGCTCTGAAA	135	60
<i>CDK2</i> (Pg.)	XM_003126260.5	F:CGGAGCTTGTTATCGCAAAT R:AGGGGTAGGGTTCACAAAGG	143	60
<i>CDK4</i> (Pg.)	NM_001123097.1	F:GCATCCCAATGTTGTCCG R:GGGGTGCCTTGTCCAGATA	126	60
<i>CCNB1</i> (Pg.)	NM_001170768.1	F:TGGCTAGTGCAGGTTTCAG R:CAGTCACAAAGGCAAAGT	199	60
<i>GAPDH</i> (Pg.)	XM_021091114.1	F:CAGCAATGCCTCCTGTACCA R:CCACGATGCCGAAGTTGTC	74	60

R.: rat; Pg.: Pig;

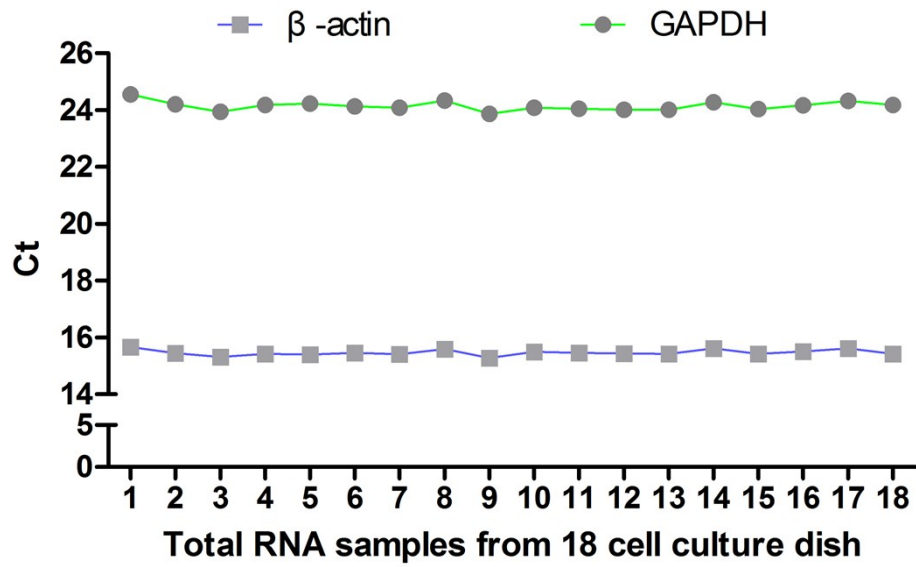


Fig. s1 Cycle threshold (Ct) of mRNA abundances of *GAPDH* and *Actb* in the 18 cell samples. Each point represented the average value of triplicated assays for 1 cell sample. Pearson correlation analysis was performed to evaluate the consistency of the two housekeeping genes with a coefficient of 0.86 ( $P < 0.01$ ,  $n = 18$ )