Online Supporting Material

Supplemental TABLE 1 List of primers used for Q-PCR analysis

Gene	Forward (5' to 3') Reverse (5' to 3')
	Cell cycle arrest proteins
CDC2[1]	CAGAGCTTTGGGCACTCCCAATAA
	ATGGGATGCTAGGCTTCCTGGTTT
Cdc25A	TGAGCAACCACTGGAGGTGAAGAA
	AGCTGGACTACATCCCAACAGCTT
CDK2	AGATGGACGGAGCTTGTTATCGCA
	TGGCTTGGTCACATCCTGGAAGAA
CDK4	TTTGTGGCCCTCAAGAGTGTGAGA
	AAAGCCTCCAGTCGCCTCAGTAAA
Cyclin A	ATGAGCATGTCACCGTTCCTCCTT
	TCAGCTGGCTTCTTCTGAGCTTCT
Cyclin D1	AGAAGCTGTGCATCTACACCGACA
	TGATCTGTTTGTTCTCCTCCGCCT
DP1	AGCGCAACAGGAAAGGAGAGAAGA
	TCGTCTGCCACTTCGTTGTAGGAA
GADD153	AGGGAGAACCAGGAAACGGAAACA
	TCCTGCTTGAGCCGTTCATTCTCT
	Apoptosis
AKT2	AGCACAGGTTCTTCCTCAGCATCA
	TGATTGTGATGGACTGGGCGGTAA
Bcl-2	GCATGCGGCCTCTGTTTGATTTCT
	AGGCATGTTGACTTCACTTGTGGC
Caspase-3	TCATTATTCAGGCCTGCCGTGGTA
	TGGATGAACCAGGAGCCATCCTTT
c-jun	GGAACAGGTGGCACAGCTTAAACA
	TTGCAACTGCTGCGTTAGCATGAG
FoxO1	GCTGCATCCATGGACAACAACAGT
	TGAGCTAGTTCGAGGGCGAAATGT
p19	TCGTGGTTCACATCTCGTGGTTCA
	CCCATCATCATGACCTGGTCTTCT
p21	TCAAAGGCCCGCTCTACATCTTCT
	TAGGAACCTCTCATTCAACCGCCT
P38	TGTCGACTTGCTGGAGAAGATGCT
	TCATAAGGATCGGCCACTGGTTCA
P53	GCCGTCCCAAGCAATGGATGATTT
	TCTGGCATTCTGGGAGCTTCATCT
	Selenoproteins
Dio1	TGGTCGTGGGTAAAGTGCTTCTGA

	TGGTATCCAGTTGTCGTGGCTGAA
Gpx1	TCAGGAGAACGCCAAGAACGAAGA
	TCTCGAAGAGCATGAAGTTGGGCT
Gpx2	AGCTCTGGGCCTTCACAGAATGAT
	TCCACACCTGCCCTTTATTGGTCT
Gpx3	AGTGGCACCATTTACGAGTACGGA
	AAGCCCAGAATGACCAGACCGAAT
Gpx4	ATACGCTGAGTGTGGTTTGCGGAT
	ATCGAATTTGACGTTGTAGCCCGC
Selh	ACGCAAACTCAAATTCCCTGAGCC
	TCAGCATGAGGGCTTCTACCCAAA
Selk	ATCAATCATCTGCGTGGCCCTAGT
	TGAGGACACAGAGCAGTCCTTGTT
Selm	ATGACAGCTGAACCGCCTAAAGGA
	AGGGAGGTGTTTCATCACCAGGTT
Selo	TTCTATGCAGCGAAGCCATGTTCC
	TACCATCATAGAACACGTCGCGCA
Sels	AATGTGGGACAGCATGCAAGAAGG
	CCGCAAAGGCTTTCTGTCCGATTT
Selt	TTCTTTGGCATGCAAGCTCCTAGC
	TGGAAGGTGACCAGATTCCAGCTT
Selv	AAAGAGCCTGGAGCAGCAATTTCC
	ATGGACCAGTCTCCCGTTCACAAA
Sep15	TTCATCGGAGGCATGCAGAGAGTT
	TGACAGCATCCTCTGCAATCAGGA
Sepn1	TCAACGAGAGCTTCATCAGCACCT
	TTGGCATTGATGTGATGGACCACG
Sepp1	AGCCAGGACCAAAGCTCCTTATGT
	TAGATGCCTGCAGTATGCACAGGT
Sepw1	ATGGCTACGTGGACACAGAAAGCA
	AGCCACGAGAACATCAGGGAAAGA
Txnrd1	TTGCAATCCAGGCAGGAAGATTGC
	AGCTTTCTCCTCAGAAAGGCCACA
Txnrd2	TGGACGAGATGCATCCCAGTGTTA
	ATCCTTGAGTAACTTCGCCTGCGT
	Control protein
HPRT	GGCCAGACTTTGTTGGATTTG
	TGCGCTCATCTTAGGCTTTGT

[1]*AKT2,* RAC-beta serine/threonine-protein kinase; *Bcl-2,* B-cell lymphoma 2; CDC2, cyclin-dependent kinase 1; *Cdc25A,* cell division cycle 25 homolog A; *CDK2,* cyclin-dependent kinase 2; *CDK4,* cyclin-dependent kinase 4; *Dio1,* deiodinase, iodothyronine, type I; *DP1,* transcription

factor Dp-1; *FoxO1,* forkhead box O1; *GDAA153,* growth arrest and DNA damage-inducible gene 153; *Gpx1,* cytosolic glutathione peroxidase; *Gpx2,* gastro-intestinal glutathione peroxidase; *Gpx3,* plasma glutathione peroxidase; *Gpx4,* phospholipid- hydroperoxide glutathione peroxidase; *HPRT,* hypoxanthine-guanine phosphoribosyltransferase; *p19,* cyclin-dependent kinase inhibitor 2A; *p21,* cyclin-dependent kinase inhibitor 1; *p38,* mitogen-activated protein kinase p38; *p53,* tumor suppressor protein 53; *Selh,* selenoprotein H; *Selk,* selenoprotein K; *Selm,* selenoprotein M; *Selo,* selenoprotein O; *Sels,* selenoprotein S; *Selt,* selenoprotein T; *Selv,* selenoprotein V; *Sep15,* 15 kDa selenoprotein; *Sepn1,* selenoprotein N; *Sepp1,* selenoprotein P; *Sepw1,* selenoprotein W; *Txnrd1,* thioredoxin reductase-1; *Txnrd2,* thioredoxin reductase-2;

Online Supporting Material

Supplemental TABLE 2 Name, type, dilution, and source of primary antibodies

Antibody	Isotype	Dilution	Source
p53	Rabbit	1,000	Cell Signaling Technology (Beverly, MA)
Bcl-2	Rabbit	1,000	Cell Signaling Technology (Beverly, MA)
c-jun	Rabbit	1,000	Santa Cruz Biotechnology (Santa Cruz, CA)
Sepp1	Rabbit	1,000	Santa Cruz Biotechnology (Santa Cruz, CA)
Sep15	Rabbit	1,000	Abcam (Cambridge, MA)
β-Actin	Rabbit	1,000	Cell Signaling Technology (Beverly, MA)

Online Supporting Material

Supplemental TABLE 3 Stepwise regression analysis between mRNA levels of selenoprotein genes (independent variables) and cell death genes (dependent variables) in Expt. 2[1]

	Stepwise Regression	R^2	*P value*
	DU145 cells		
[2]Y_1	Y_1=-0.086X_3+1.03	0.29	0.11
Y_3	Y_3=0.0022X_1-0.0031X_2-0.006X_4+0.015	0.77	0.02
Y_4	Y_4=0.10X_1-0.17X_3-0.89X_5+1.0	0.73	0.04
Y_5	Y_5=-0.22X_2+2.27	0.56	0.01
Y_6	Y_6=-0.23X_2+2.78	0.42	0.04
Y_7	Y_7=0.42X_2-0.39X_3+1.04	0.88	0.00
Y_8	Y_8=0.04X_2-0.086	0.65	0.01
Y_{10}	Y_{10}=0.30X_3+2.14X_5-2.7X_8-0.80	0.78	0.02
Y_{11}	Y_{11}=0.021X_1+0.028X_2+0.05X_3-0.11X_4-0.15X_7-0.12	0.96	0.01
Y_{12}	Y_{12}=0.053X_2+0.044	0.57	0.01
	HTC116 cells		
Y_4	Y_4=0.014X_1-0.07X_6-0.19X_9+1.25	1.00	0.02
Y_7	Y_7=6.84X_{10}-325.90X_{11}-10.53	1.00	0.01
Y_9	Y_9=0.087X_9-0.16	0.93	0.01
Y_{11}	Y_{11}=-0.028X_9+0.28	0.70	0.08
Y_{12}	Y_{12}=4.91X_7-0.12X_{10}+0.27	1.00	0.01

[1]Data were from cells treated with the control porcine serum, the Se-biofortified serum, and the MSA-balanced serum.

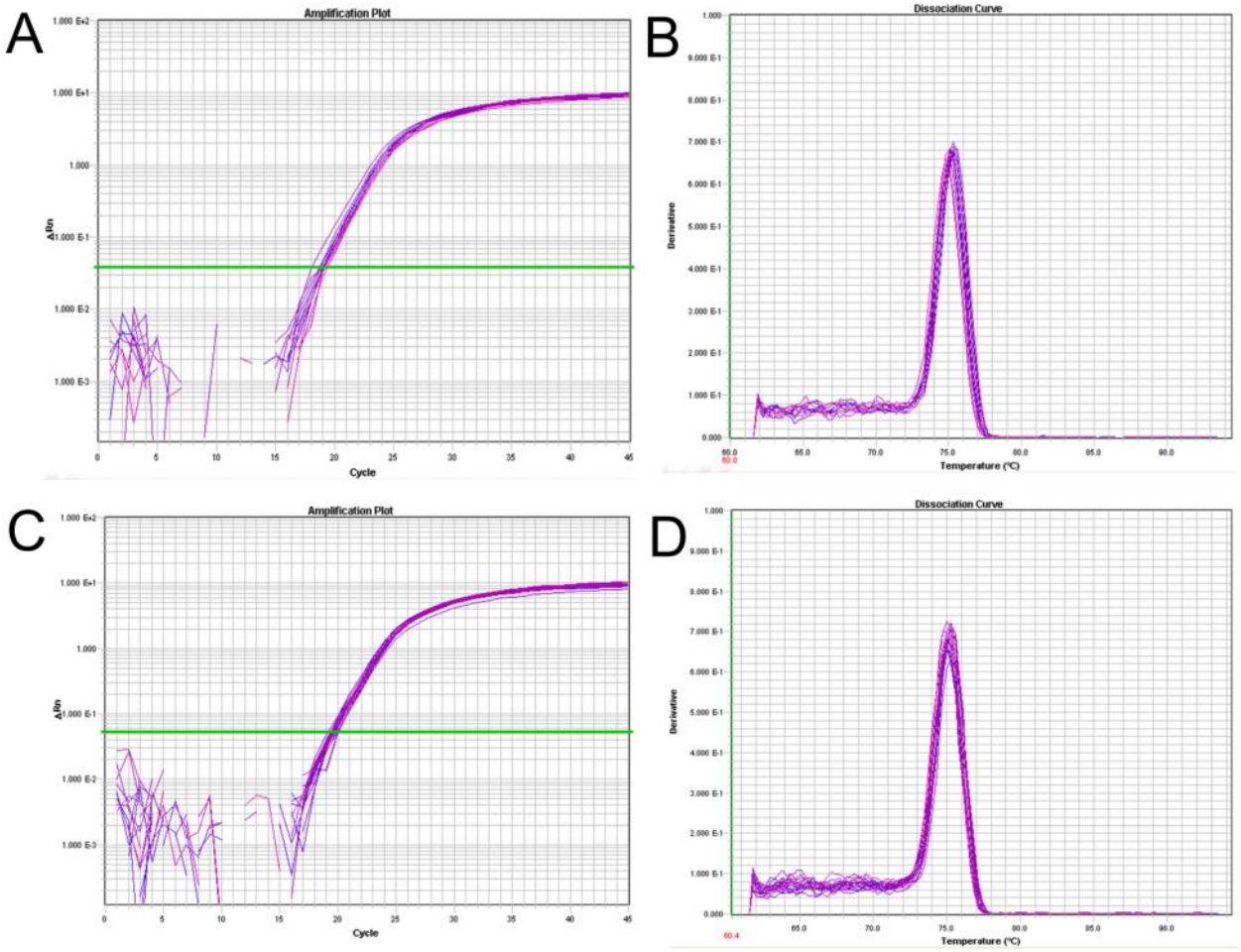
[2]Y_1: DP1; Y_2: Cdc2; Y_3: Cdc25A; Y_4: CyclinA; Y_5: CDK2; Y_6: CDK4; Y_7: GADD153; Y_8: p53; Y_9: p38; Y_{10}: c-jun; Y_{11}: Caspase3; Y_{12}: FoxO1; X_1: Gpx4; X_2: Sep15; X_3: Selt; X_4: Gpx1; X_5: Sepp1; X_6: Sels; X_7: Txnrd2; X_8: Selm; X_9: Selh; X_{10}: Selk; X_{11}: Sepn1.

Online Supporting Material

Supplemental TABLE 4 Doses of selenium in various forms used in previous studies

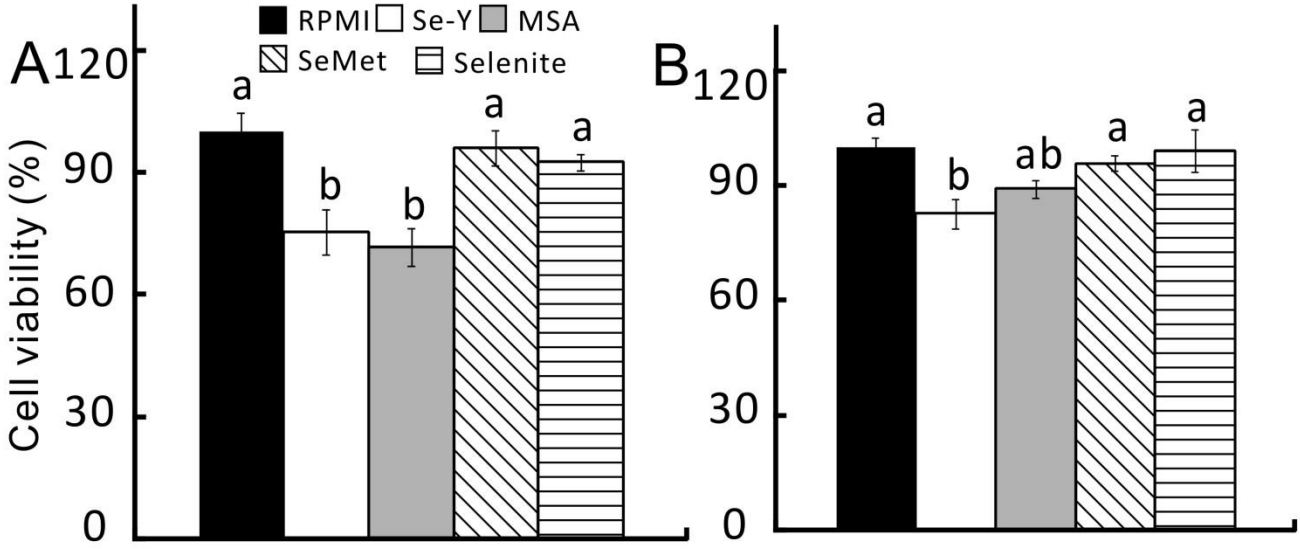
Forms	Se, μM	Cell Lines	Reference
MSA	5-10	PC-3	33
	3-30	LNCaP	34
	3-5	DU145	35
SeMet	45-130	MCF7S, DU145 and UACC375	31
	32	HT-29, HCA-7, Caco-60 and Caco-pcDNA	32
	25-400	PC-3	33
Sodium	5	DU145	35
selenite	10-100	B16 and pB16	36
	20	NB4	37

Online Supporting Material



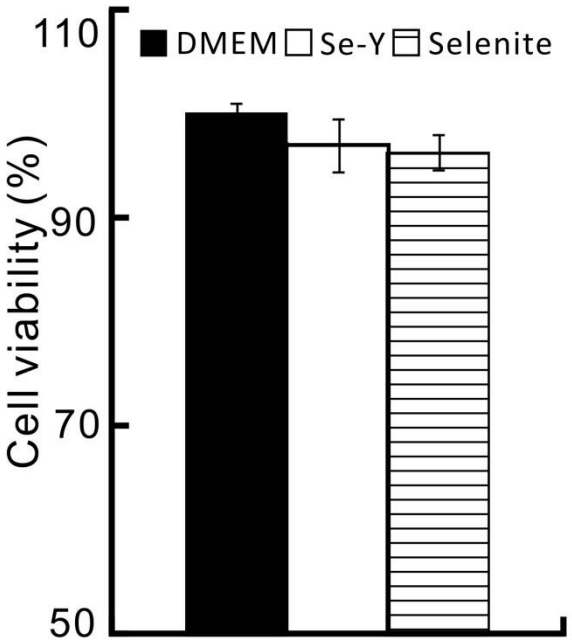
Supplemental FIGURE 1 Amplification plots (A and C) and dissociation curves (B and D) based on Q-PCR data used to detect HPRT mRNA abundances in DU145 cells (A and B) and HCT116 cells (C and D) in Expt. 2. The assay for HPRT mRNA abundances in the five treatments (Control, Se-Y, MSA, SeMet and Selenite) was conducted simultaneously on one 384-well plate. (A and C) The cycle threshold (Ct) value was the projection of crossing point on X-axis of ΔRn threshold line (Y =0.04-0.05). The amplification plot in the increased logarithmic phase and the smaller Ct value represented the higher abundance of initial mRNA template that can be detected after less PCR cycles. (B and D) The single sharp dissociation curve cluster of HPRT represented the gene's specific amplification.

Online Supporting Material



Supplemental FIGURE 2 Effects of the Se-biofortified porcine serum (Se-Y) treatment on cell viability of the human prostate cancer cells (DU145, A) and the human colon cancer cells (HTC116, B), in comparison with the RPMI 1640 medium (supplemented with 100 IU of penicillin, 100 μg of streptomycin/mL and 10% fetal bovine serum) or that medium was added with different Se compounds to match the Se concentration in Se-Y in Expt. 2. The cells were seeded at 1×10^4 cells/well in 24-well plates and incubated with the designated Se sources for 144 h. Cell viability was determined using MTT assay. Data are means ± SE, n = 5. Bars not sharing a common letter differ ($P < 0.05$).

Online Supporting Material



Supplemental FIGURE 3 Effects of the Se-biofortified porcine serum (Se-Y) treatment on cell viability of the human hepatocellular carcinoma cells (HepG2), in comparison with the DMEM medium (supplemented with 100 IU of penicillin, 100 μg of streptomycin/mL and 10% fetal bovine serum) or that medium added with sodium selenite to match the Se concentration in Se-Y in Expt. 2. The cells were seeded at 1×10^4 cells/well in 24-well plates and incubated with the designated Se sources for 36 h. Cell viability was determined using MTT assay. Data are means ± SE, n = 6.