

Supplement 1. Food intake of rats during the 4-weeks of inhalation exposure to SiNPs and recovery periods

Group (mean ± SE, g)	Control	Low	Middle	High
1 week	25.76 ± 7.81 (15)	23.78 ± 1.61 (15)	22.38 ± 1.36 (15)	21.90 ± 0.43 (15)
2 week,	20.74 ± 1.44 (15)	24.03 ± 2.99 (15)	22.62 ± 0.52 (15)	21.87 ± 0.77 (15)
3 week	24.04 ± 1.67 (15)	24.70 ± 1.89 (15)	24.47 ± 0.71 (15)	22.84 ± 0.86 (15)
4 week	22.92 ± 2.75 (15)	24.79 ± 2.61 (15)	24.08 ± 0.55 (15)	22.92 ± 0.40 (15)
5 week	33.11 ± 2.87 (10)	30.09 ± 1.08 (10)	28.79 ± 1.89 (10)	28.65 ± 1.38 (10)
6 week	31.43 ± 0.46 (5)	30.37 ± 1.32 (5)	28.38 ± 0.12 (5)	30.30 ± 0.14 (5)
7 week	32.81 ± 0.62 (5)	28.73 ± 1.52 (5)	29.20 ± 2.40 (5)	29.08 ± 1.01 (5)
8 week	31.26 ± 1.43 (5)	31.66 ± 1.43 (5)	29.73 ± 0.46 (5)	31.75 ± 1.77 (5)

(), Number of rat

Supplement 2. Body weights of rats during the 4-weeks of inhalation exposure to SiNPs and recovery periods

Group (mean ± SE, g)	Control	Low	Middle	High
0 day	280.26 ± 2.24 (15)	279.72 ± 2.33 (15)	276.61 ± 1.90 (15)	277.26 ± 1.73 (15)
1 week	277.49 ± 2.88 (15)	280.97 ± 2.60 (15)	279.11 ± 2.16 (15)	277.82 ± 1.72 (15)
2 week	323.44 ± 3.46 (15)	324.15 ± 4.19 (15)	318.81 ± 3.08 (15)	315.17 ± 2.47 (15)
3 week	354.11 ± 4.19 (15)	355.16 ± 5.79 (15)	348.34 ± 3.86 (15)	341.34 ± 2.94 (15)
4 week	379.55 ± 5.06 (15)	385.62 ± 6.85 (15)	374.41 ± 4.31 (15)	364.19 ± 3.53 (15)
Recovery day 1	355.22 ± 9.86 (5)	367.08 ± 10.61 (5)	361.06 ± 12.53 (5)	349.42 ± 4.07 (5)
5 week	408.81 ± 6.30 (10)	408.37 ± 9.88 (10)	394.67 ± 4.54 (10)	381.82 ± 6.16 (10) ^a
Recovery day 7	397.88 ± 8.33 (5)	375.50 ± 7.13 (5)	388.36 ± 5.92 (5)	384.24 ± 5.73 (5)
6 week	450.62 ± 9.83 (5)	496.78 ± 9.70 (5)	430.40 ± 6.22 (5)	416.02 ± 13.50 (5)
7 week	486.36 ± 13.14 (5)	503.60 ± 9.47 (5)	459.38 ± 5.55 (5)	448.64 ± 15.11 (5)
8 week	512.02 ± 14.53 (5)	526.72 ± 10.60 (5)	481.36 ± 5.56 (5)	471.48 ± 17.71 (5)
Recovery day 28	494.94 ± 12.91 (5)	512.74 ± 9.23 (5)	465.52 ± 5.36 (5)	456.02 ± 17.63 (5)

(), Number of rat

^a*p*<0.05 comparison with control group

Supplement 3. Relative organ weights of rats after 4-weeks of inhalation exposure to SiNPs followed by 1 day recovery ($n=5$ for each groups)

Group (mean \pm SE, g)	Control	Low	Middle	High
Brain	0.58 \pm 0.02	0.55 \pm 0.02	0.58 \pm 0.02	0.57 \pm 0.03
Lung (right)	0.21 \pm 0.01	0.20 \pm 0.03	0.22 \pm 0.02	0.24 \pm 0.02
Lung (left)	0.22 \pm 0.01	0.22 \pm 0.03	0.21 \pm 0.02	0.22 \pm 0.01
Spleen	0.14 \pm 0.01	0.15 \pm 0.01	0.14 \pm 0.02	0.14 \pm 0.01
Kidney (right)	0.31 \pm 0.01	0.32 \pm 0.01	0.33 \pm 0.01	0.35 \pm 0.01
Kidney (left)	0.31 \pm 0.02	0.34 \pm 0.01	0.33 \pm 0.02	0.37 \pm 0.02 ^a
Thymus	0.11 \pm 0.00	0.11 \pm 0.01	0.10 \pm 0.01	0.10 \pm 0.01
Testis (right)	0.39 \pm 0.01	0.42 \pm 0.02	0.40 \pm 0.03	0.44 \pm 0.02
Testis (left)	0.39 \pm 0.02	0.43 \pm 0.02	0.40 \pm 0.02	0.43 \pm 0.02
Heart	0.36 \pm 0.01	0.34 \pm 0.01	0.34 \pm 0.01	0.35 \pm 0.01
Liver	2.43 \pm 0.05	2.57 \pm 0.11	2.57 \pm 0.05	3.17 \pm 0.33 ^a

^a $p < 0.05$ comparison with control group

Supplement 4. Relative organ weights of rats after 4-weeks of inhalation exposure to SiNPs followed by 7 day recovery ($n=5$ for each groups)

Group (mean \pm SE, g)	Control	Low	Middle	High
Brain	0.53 \pm 0.01	0.55 \pm 0.02	0.52 \pm 0.01	0.53 \pm 0.01
Lung (right)	0.21 \pm 0.01	0.21 \pm 0.01	0.21 \pm 0.02	0.22 \pm 0.01
Lung (left)	0.18 \pm 0.01	0.19 \pm 0.01	0.18 \pm 0.01	0.19 \pm 0.00
Spleen	0.15 \pm 0.00	0.17 \pm 0.01	0.17 \pm 0.02	0.17 \pm 0.01
Kidney (right)	0.35 \pm 0.01	0.41 \pm 0.07	0.34 \pm 0.03	0.34 \pm 0.00
Kidney (left)	0.33 \pm 0.01	0.33 \pm 0.01	0.34 \pm 0.02	0.33 \pm 0.01
Thymus	0.12 \pm 0.01	0.10 \pm 0.01	0.10 \pm 0.01	0.12 \pm 0.01
Testis (right)	0.38 \pm 0.01	0.40 \pm 0.02	0.35 \pm 0.13	0.39 \pm 0.01
Testis (left)	0.38 \pm 0.01	0.41 \pm 0.02	0.35 \pm 0.12	0.39 \pm 0.01
Heart	0.31 \pm 0.01	0.31 \pm 0.01	0.31 \pm 0.02	0.31 \pm 0.01
Liver	2.23 \pm 0.48	2.78 \pm 0.06	2.64 \pm 0.15	2.49 \pm 0.04

Supplement 5. Relative organ weights of rats after 4-weeks of inhalation exposure to SiNPs followed by 28 day recovery ($n=5$ for each groups)

Group (mean \pm SE, g)	Control	Low	Middle	High
Brain	0.42 \pm 0.02	0.42 \pm 0.01	0.47 \pm 0.02	0.47 \pm 0.02
Lung (right)	0.19 \pm 0.00	0.20 \pm 0.00	0.20 \pm 0.00	0.20 \pm 0.02
Lung (left)	0.16 \pm 0.01	0.17 \pm 0.01	0.18 \pm 0.01	0.17 \pm 0.01
Spleen	0.16 \pm 0.01	0.16 \pm 0.01	0.16 \pm 0.01	0.18 \pm 0.03
Kidney (right)	0.30 \pm 0.01	0.32 \pm 0.02	0.31 \pm 0.01	0.28 \pm 0.03
Kidney (left)	0.29 \pm 0.02	0.30 \pm 0.01	0.31 \pm 0.00	0.30 \pm 0.00
Thymus	0.08 \pm 0.01	0.07 \pm 0.00	0.08 \pm 0.00	0.08 \pm 0.01
Testis (right)	0.30 \pm 0.02	0.31 \pm 0.01	0.33 \pm 0.01	0.33 \pm 0.02
Testis (left)	0.30 \pm 0.01	0.31 \pm 0.01	0.34 \pm 0.02	0.34 \pm 0.02
Heart	0.28 \pm 0.00	0.27 \pm 0.01	0.29 \pm 0.01	0.31 \pm 0.01
Liver	2.67 \pm 0.09	2.70 \pm 0.06	2.56 \pm 0.03	2.60 \pm 0.07

Supplement 6. Hematology of rats after 4-weeks of inhalation exposure to SiNPs followed by 1 day recovery ($n=5$ for each groups)

Group (mean \pm SE)	Control	Low	Middle	High
WBC ($\times 10^3/\mu\text{L}$)	5.72 \pm 0.42	5.86 \pm 0.63	6.58 \pm 2.94	5.34 \pm 0.66
Abs-NEUT ($\times 10^3/\mu\text{L}$)	0.78 \pm 0.08	0.68 \pm 0.05	1.03 \pm 0.46	1.24 \pm 0.57
Abs-LYM ($\times 10^3/\mu\text{L}$)	4.43 \pm 0.46	5.02 \pm 0.67	5.32 \pm 2.38	3.82 \pm 1.00
Abs-MONO ($\times 10^3/\mu\text{L}$)	0.09 \pm 0.01	0.08 \pm 0.02	0.12 \pm 0.05	0.22 \pm 0.12
Abs-EOS ($\times 10^3/\mu\text{L}$)	0.06 \pm 0.01	0.06 \pm 0.01	0.08 \pm 0.04	0.03 \pm 0.01
NEUT (%)	15.40 \pm 2.08	12.20 \pm 1.60	16.88 \pm 7.55	25.08 \pm 12.71
LYM (%)	81.32 \pm 2.37	84.88 \pm 1.93	79.52 \pm 35.56	69.62 \pm 15.10
MONO (%)	1.72 \pm 0.17	1.30 \pm 0.28	1.88 \pm 0.84	4.34 \pm 2.65
EOS (%)	1.24 \pm 0.30	1.20 \pm 0.25	1.30 \pm 0.58	0.56 \pm 0.22
BASO (%)	0.04 \pm 0.02	0.02 \pm 0.02	0.04 \pm 0.02	0.04 \pm 0.02
RBC ($\times 10^6/\mu\text{L}$)	5.72 \pm 0.42	8.46 \pm 0.16 ^a	8.48 \pm 3.79 ^a	8.38 \pm 0.10 ^a
Hb (g/dL)	16.89 \pm 0.19	17.40 \pm 0.24 ^a	17.70 \pm 7.92 ^b	17.26 \pm 0.25
Hct (%)	45.86 \pm 0.77	48.06 \pm 0.83	48.10 \pm 21.51	46.98 \pm 1.21
MCV (fL)	57.94 \pm 1.13	56.86 \pm 0.97	56.78 \pm 25.39	56.06 \pm 0.80
MCH (pg)	20.96 \pm 0.27	20.56 \pm 0.31	20.86 \pm 9.33	20.60 \pm 0.16
MCHC (g/dL)	36.16 \pm 0.25	36.20 \pm 0.25	36.76 \pm 16.44	36.76 \pm 0.58
RDW (%)	10.66 \pm 0.20	10.78 \pm 0.19	10.62 \pm 4.75	10.64 \pm 0.11
Retic (%)	1.98 \pm 0.12	1.29 \pm 0.33	1.85 \pm 0.83	1.74 \pm 0.20
PLT ($\times 10^6/\mu\text{L}$)	1.04 \pm 0.04	1.09 \pm 0.03	1.03 \pm 0.05	1.05 \pm 0.02

^a $p < 0.05$ comparison with control group; ^b $p < 0.01$ comparison with control group

WBC, white blood cell; Abs, Absolute; NEUT, Neutrophil; LYM, Lymphocyte; MONO, Monocyte; EOS, Eosinophil; RBC, Red blood cell; Hb, Hemoglobin; Hct, Hematocrit; MCV, Mean corpuscular volume; MCH, Mean corpuscular hemoglobin; MCHC, Mean corpuscular hemoglobin concentration; RDW, Red cell distribution width; Retic, Reticulocyte; PLT, Platelet

Supplement 7. Hematology of rats after 4-weeks of inhalation exposure to SiNPs followed by 7 day recovery ($n=5$ for each groups)

Group (mean \pm SE)	Control	Low	Middle	High
WBC ($\times 10^3/\mu\text{L}$)	4.31 \pm 0.61	6.01 \pm 0.77	7.44 \pm 1.52	6.69 \pm 0.71
Abs-NEUT ($\times 10^3/\mu\text{L}$)	0.77 \pm 0.30	0.78 \pm 0.11	0.95 \pm 0.12	0.78 \pm 0.10
Abs-LYM ($\times 10^3/\mu\text{L}$)	3.42 \pm 1.03	5.07 \pm 0.66	6.25 \pm 1.37	5.72 \pm 0.68
Abs-MONO ($\times 10^3/\mu\text{L}$)	0.08 \pm 0.04	0.10 \pm 0.02	0.15 \pm 0.03	0.09 \pm 0.03
Abs-EOS ($\times 10^3/\mu\text{L}$)	0.05 \pm 0.01	0.04 \pm 0.00	0.06 \pm 0.01	0.06 \pm 0.01
NEUT (%)	17.45 \pm 1.44	13.12 \pm 0.63	13.56 \pm 1.06	12.02 \pm 1.74 ^a
LYM (%)	79.60 \pm 1.33	84.16 \pm 0.79	83.10 \pm 1.19	85.16 \pm 2.03 ^a
MONO (%)	1.63 \pm 0.56	1.58 \pm 0.11	2.02 \pm 0.07	1.44 \pm 0.39
EOS (%)	1.15 \pm 0.48	0.82 \pm 0.22	0.94 \pm 0.16	1.00 \pm 0.15
BASO (%)	0.03 \pm 0.05	0.06 \pm 0.02	0.06 \pm 0.02	0.02 \pm 0.02
RBC ($\times 10^6/\mu\text{L}$)	7.39 \pm 0.88	8.16 \pm 0.09	8.29 \pm 0.17 ^a	7.83 \pm 0.10
Hb (g/dL)	15.78 \pm 1.59	16.88 \pm 0.21	17.12 \pm 0.33	16.84 \pm 0.22
Hct (%)	43.00 \pm 5.36	46.56 \pm 0.66	45.88 \pm 1.25	44.18 \pm 0.51
MCV (fL)	58.20 \pm 1.09	57.08 \pm 0.81	55.34 \pm 1.26	56.46 \pm 0.49
MCH (pg)	21.38 \pm 0.50	20.70 \pm 0.20	20.68 \pm 0.39	21.52 \pm 0.22
MCHC (g/dL)	36.75 \pm 1.17	36.28 \pm 0.24	37.38 \pm 0.28	38.12 \pm 0.23 ^a
RDW (%)	11.23 \pm 0.57	10.78 \pm 0.12	10.84 \pm 0.18	10.66 \pm 0.12
Retic (%)	2.47 \pm 0.05	2.47 \pm 0.20	2.41 \pm 0.27	2.30 \pm 0.16
PLT ($\times 10^6/\mu\text{L}$)	0.84 \pm 0.03	1.06 \pm 0.04	1.06 \pm 0.05	0.95 \pm 0.05

^a $p < 0.05$ comparison with control group

WBC, white blood cell; Abs, Absolute; NEUT, Neutrophil; LYM, Lymphocyte; MONO, Monocyte; EOS, Eosinophil; RBC, Red blood cell; Hb, Hemoglobin; Hct, Hematocrit; MCV, Mean corpuscular volume; MCH, Mean corpuscular hemoglobin; MCHC, Mean corpuscular hemoglobin concentration; RDW, Red cell distribution width; Retic, Reticulocyte; PLT, Platelet

Supplement 8. Hematology of rats after 4-weeks of inhalation exposure to SiNPs followed by 28 day recovery ($n=5$ for each groups)

Group (mean \pm SE)	Control	Low	Middle	High
WBC ($\times 10^3/\mu\text{L}$)	5.07 \pm 0.59	6.60 \pm 1.44	7.37 \pm 0.70	6.43 \pm 0.32
Abs-NEUT ($\times 10^3/\mu\text{L}$)	1.10 \pm 0.12	1.02 \pm 1.14	1.04 \pm 0.11	1.08 \pm 0.18
Abs-LYM ($\times 10^3/\mu\text{L}$)	3.80 \pm 0.67	5.38 \pm 0.02	6.13 \pm 0.62	5.10 \pm 0.28
Abs-MONO ($\times 10^3/\mu\text{L}$)	0.06 \pm 0.01	0.10 \pm 0.02	0.10 \pm 0.01	0.14 \pm 0.02 ^a
Abs-EOS ($\times 10^3/\mu\text{L}$)	0.08 \pm 0.01	0.06 \pm 0.02	0.07 \pm 0.01	0.08 \pm 0.02
NEUT (%)	23.51 \pm 4.18	14.70 \pm 1.14	14.28 \pm 1.45	16.72 \pm 2.38
LYM (%)	73.04 \pm 4.54	82.40 \pm 1.23	82.92 \pm 1.37	79.36 \pm 2.56
MONO (%)	1.30 \pm 0.12	1.56 \pm 0.19	1.36 \pm 0.10	2.14 \pm 0.29 ^a
EOS (%)	1.80 \pm 0.41	0.84 \pm 0.21 ^a	1.02 \pm 0.08	1.26 \pm 0.30
BASO (%)	0.02 \pm 0.02	0.01 \pm 0.28	0.04 \pm 0.02	0.06 \pm 0.02
RBC ($\times 10^6/\mu\text{L}$)	8.09 \pm 0.12	7.96 \pm 0.19	8.41 \pm 0.13	8.33 \pm 0.33
Hb (g/dL)	14.66 \pm 0.22	14.44 \pm 0.44	14.96 \pm 0.35	14.80 \pm 0.29
Hct (%)	45.42 \pm 0.65	44.16 \pm 1.12	45.94 \pm 0.83	45.48 \pm 0.91
MCV (fL)	56.16 \pm 0.32	55.50 \pm 0.80	54.66 \pm 0.98	54.74 \pm 1.03
MCH (pg)	18.12 \pm 0.16	18.14 \pm 0.22	17.80 \pm 0.41	17.82 \pm 0.31
MCHC (g/dL)	32.24 \pm 0.28	32.70 \pm 0.28	32.52 \pm 0.22	32.58 \pm 0.15
RDW (%)	12.94 \pm 0.28	12.50 \pm 0.44	12.86 \pm 0.28	12.90 \pm 0.29
Retic (%)	3.07 \pm 0.14	2.64 \pm 0.18	2.75 \pm 0.08	2.50 \pm 0.16 ^a
PLT ($\times 10^6/\mu\text{L}$)	0.96 \pm 0.11	0.77 \pm 0.20	0.88 \pm 0.10	1.07 \pm 0.08

^a $p < 0.05$ comparison with control group

WBC, white blood cell; Abs, Absolute; NEUT, Neutrophil; LYM, Lymphocyte; MONO, Monocyte; EOS, Eosinophil; RBC, Red blood cell; Hb, Hemoglobin; Hct, Hematocrit; MCV, Mean corpuscular volume; MCH, Mean corpuscular hemoglobin; MCHC, Mean corpuscular hemoglobin concentration; RDW, Red cell distribution width; Retic, Reticulocyte; PLT, Platelet

Supplement 9. Blood coagulation times of rats after 4-weeks repeated inhalation of SiNPs followed by 1, 7, and 28 days of recovery ($n=5$ for each groups)

Group (mean \pm SE)	Control	Low	Middle	High
Recovery day 1				
PT (sec)	11.14 \pm 0.20	10.94 \pm 0.30	10.47 \pm 0.47	12.08 \pm 0.99
aPTT (sec)	19.45 \pm 0.70	19.47 \pm 0.36	19.19 \pm 0.94	19.42 \pm 2.46
Recovery day 7				
PT (sec)	11.03 \pm 0.85	10.18 \pm 0.24	10.13 \pm 0.50	10.63 \pm 0.38
aPTT (sec)	21.42 \pm 1.18	21.88 \pm 1.56	18.45 \pm 0.97	18.22 \pm 1.32
Recovery Day 28				
PT (sec)	10.26 \pm 0.13	9.95 \pm 0.14	10.46 \pm 0.18	9.87 \pm 0.29
aPTT (sec)	20.08 \pm 1.00	21.33 \pm 0.59	20.42 \pm 0.81	18.80 \pm 0.75

PT, Prothrombin time; aPTT, activated partial thromboplastin time

Supplement 10. Levels of serum biochemical markers after 4-weeks of inhalation exposure to SiNPs followed by 1 day recovery ($n=5$ for each groups)

Group (mean \pm SE)	Control	Low	Middle	High
ALB (g/dL)	2.42 \pm 0.04	2.36 \pm 0.05	2.42 \pm 0.02	2.38 \pm 0.04
ALP (IU/L)	490.40 \pm 25.95	474.80 \pm 27.10	502.40 \pm 56.76	430.60 \pm 47.87
CA (mg/dL)	9.22 \pm 0.12	9.80 \pm 0.25	9.78 \pm 0.12	9.94 \pm 0.29
CHOL (mg/dL)	63.40 \pm 3.56	53.60 \pm 2.29	63.20 \pm 4.73	73.80 \pm 6.30
CREA (mg/dL)	0.63 \pm 0.01	0.59 \pm 0.05	0.62 \pm 0.03	0.52 \pm 0.01
AST (IU/L)	211.40 \pm 15.77	184.40 \pm 4.46	160.00 \pm 15.12 ^a	91.40 \pm 3.84 ^b
ALT (IU/L)	40.60 \pm 2.91	40.20 \pm 1.59	39.80 \pm 1.80	39.80 \pm 2.94
IP (mg/dL)	9.66 \pm 0.20	10.36 \pm 0.32	9.46 \pm 0.32	9.02 \pm 0.84
LDH (IU/L)	3032.20 \pm 312.63	2438.00 \pm 73.93	2041.60 \pm 365.26 ^a	404.40 \pm 76.01 ^b
MG (mg/dL)	3.06 \pm 0.12	2.82 \pm 0.11	2.48 \pm 0.09	2.58 \pm 0.32
TP (g/dL)	5.86 \pm 0.10	5.92 \pm 0.16	5.96 \pm 0.06	5.78 \pm 0.06
UA (mg/dL)	1.30 \pm 0.07	1.42 \pm 0.07	1.58 \pm 0.06	2.04 \pm 0.67
BUN (mg/dL)	20.10 \pm 0.68	19.98 \pm 0.87	19.66 \pm 0.80	16.94 \pm 0.60 ^a
CK (IU/L)	1874.60 \pm 171.38	1928.80 \pm 92.57	1964.60 \pm 257.80	561.60 \pm 75.38 ^b

^a $p < 0.05$ comparison with control group; ^b < 0.01 comparison with control group

ALB, Albumin; ALP, Alkaline phosphatase; CA, Calcium; CHOL, Cholesterol; CREA, Creatinine;

AST, Aspartate aminotransferase; ALT, Alanine aminotransferase; IP, Inorganic phosphorus;

LDH, Lactate dehydrogenase; MG, Magnesium; TP, Total protein; UA, Uric acid; BUN, Blood urea nitrogen;

CK, Creatine kinase

Supplement 11. . Levels of serum biochemical markers after 4-weeks of inhalation exposure to SiNPs followed by 7 day recovery ($n=5$ for each groups)

Group (mean \pm SE)	Control	Low	Middle	High
ALB (g/dL)	2.38 \pm 0.04	2.36 \pm 0.05	2.38 \pm 0.02	2.24 \pm 0.04
ALP (IU/L)	451.80 \pm 13.27	523.20 \pm 52.06	403.00 \pm 32.95	358.00 \pm 24.09
CA (mg/dL)	8.76 \pm 0.09	8.88 \pm 0.19	9.14 \pm 0.69	9.22 \pm 0.19
CHOL (mg/dL)	67.60 \pm 4.61	62.20 \pm 5.94	61.20 \pm 3.28	67.20 \pm 4.10
CREA (mg/dL)	0.55 \pm 0.03	0.51 \pm 0.02	0.53 \pm 0.04	0.47 \pm 0.04
AST (IU/L)	220.80 \pm 10.98	177.20 \pm 22.51	166.80 \pm 7.38 ^a	104.40 \pm 7.61 ^b
ALT (IU/L)	36.20 \pm 1.11	38.00 \pm 0.55	34.20 \pm 3.62	28.00 \pm 1.87 ^a
IP (mg/dL)	7.86 \pm 0.26	8.30 \pm 0.37	8.70 \pm 0.62	7.90 \pm 0.24
LDH (IU/L)	3654.00 \pm 230.13	2417.80 \pm 507.86 ^b	2209.60 \pm 107.55 ^b	1024.00 \pm 153.38 ^b
MG (mg/dL)	2.60 \pm 0.07	2.48 \pm 0.12	2.86 \pm 0.25	2.36 \pm 0.07
TP (g/dL)	5.82 \pm 0.07	5.76 \pm 0.09	5.70 \pm 0.07	5.34 \pm 0.12 ^b
UA (mg/dL)	1.38 \pm 0.08	1.32 \pm 0.16	1.44 \pm 0.15	1.10 \pm 0.07
BUN (mg/dL)	17.84 \pm 1.38	16.50 \pm 0.66	15.78 \pm 0.67	14.92 \pm 0.89
CK (IU/L)	2503.80 \pm 194.02	2390.80 \pm 404.78	1796.40 \pm 162.60	970.00 \pm 71.56 ^b

^a $p < 0.05$ comparison with control group; ^b < 0.01 comparison with control group

ALB, Albumin; ALP, Alkaline phosphatase; CA, Calcium; CHOL, Cholesterol; CREA, Creatinine;

AST, Aspartate aminotransferase; ALT, Alanine aminotransferase; IP, Inorganic phosphorus;

LDH, Lactate dehydrogenase; MG, Magnesium; TP, Total protein; UA, Uric acid; BUN, Blood urea nitrogen;

CK, Creatine kinase

Supplement 12. . Levels of serum biochemical markers after 4-weeks of inhalation exposure to SiNPs followed by 28 day recovery ($n=5$ for each groups)

Group (mean \pm SE)	Control	Low	Middle	High
ALB (g/dL)	2.30 \pm 0.07	2.28 \pm 0.04	2.30 \pm 0.03	2.38 \pm 0.04
ALP (IU/L)	458.20 \pm 59.84	359.80 \pm 19.58	348.40 \pm 23.18	360.40 \pm 14.50
CA (mg/dL)	9.44 \pm 0.11	9.48 \pm 0.06	9.40 \pm 0.09	9.74 \pm 0.09
CHOL (mg/dL)	66.40 \pm 6.82	70.60 \pm 3.94	63.40 \pm 4.81	67.80 \pm 5.19
CREA (mg/dL)	0.52 \pm 0.02	0.53 \pm 0.03	0.48 \pm 0.02	0.53 \pm 0.02
AST (IU/L)	143.60 \pm 10.82	136.60 \pm 8.19	127.80 \pm 12.11	115.00 \pm 8.32
ALT (IU/L)	41.40 \pm 3.08	34.80 \pm 2.89	33.40 \pm 1.83	37.20 \pm 1.28
IP (mg/dL)	7.28 \pm 0.15	8.12 \pm 0.32	7.38 \pm 0.11	7.06 \pm 0.31
LDH (IU/L)	2013.00 \pm 166.36	1946.80 \pm 240.11	1762.20 \pm 254.43	1469.80 \pm 130.98
MG (mg/dL)	2.50 \pm 0.09	2.40 \pm 0.06	2.24 \pm 0.05	2.30 \pm 0.11
TP (g/dL)	6.12 \pm 0.17	6.14 \pm 0.07	6.10 \pm 0.03	6.02 \pm 0.07
UA (mg/dL)	1.34 \pm 0.04	1.32 \pm 0.11	1.20 \pm 0.08	1.30 \pm 0.08
BUN (mg/dL)	17.74 \pm 0.99	17.92 \pm 0.83	17.28 \pm 0.91	19.72 \pm 1.07
CK (IU/L)	1839.00 \pm 388.94	1645.20 \pm 134.40	1115.80 \pm 148.35	933.80 \pm 83.52 ^a

^a $p < 0.05$ comparison with control group

ALB, Albumin; ALP, Alkaline phosphatase; CA, Calcium; CHOL, Cholesterol; CREA, Creatinine; AST, Aspartate aminotransferase; ALT, Alanine aminotransferase; IP, Inorganic phosphorus; LDH, Lactate dehydrogenase; MG, Magnesium; TP, Total protein; UA, Uric acid; BUN, Blood urea nitrogen; CK, Creatine kinase