

Table 1. Sequences of primers used for real-time RT-PCR

Gene	Forward sequence (5'–3')	Reverse sequence (5'–3')
Phase I drug metabolism enzymes		
<i>Cyp1a1</i>	GCCTTCACATCAGCCACAGA	TTGTGACTCTAACCACCCAGAATC
<i>Cyp2b1/2</i>	GGGACACTGAAAAAGAGTGAAGCT	AATGCCTTCGCCAAGACAAAT
Antioxidant enzymes		
<i>Nqo1</i>	GCTCTATCGTGCTCGCATGA	TCTTCTGTCACCCTGTGCTTGA
<i>Gpx2</i>	GTGTGATGTCAATGGGCAGAAT	AGGGCAGCTTGTCTTTCAGGTA
NOX-related factors		
<i>Cybb</i>	AAGAAGAAGGGATTCAGGATGGA	ACACTGCGGGACGCTTGA
<i>Rac1</i>	TTCCTACCCGCAAACAGAC	CGGGTAGGTAATGGGAGTCA
Housekeeping gene		
<i>Actb</i>	CCCTGGCTCCTAGCACCAT	AGAGCCACCAATCCACACAGA

Table 2. Body and organ weights, daily food, water and estimated chemical intakes of rats given PBO, APO and/or NAC for 8 weeks after DEN initiation

Groups	DEN-alone	PBO	APO	NAC	PBO+APO	PBO+NAC
Number of rats	12	11	12	12	15	10
Final body weight (g)	279.9±13.9	205.1±7.4**	285.6±18.8	269.9±15.2	206.6±12.3**	194.6±14.7**
Food intake (g/rat/day)	12.7±0.9	11.7±2.4	12.9±1.0	12.1±1.1	11.7±2.5	11.5±2.6
Water intake (g/rat/day)	17.1±1.5	15.6±2.4	18.0±1.5	13.9±3.2	15.9±2.6	12.8±3.1
PBO intake (mg/kg BW/day)	–	37.63±2.15	–	–	37.28±2.77	35.45±2.82
APO intake (mg/kg BW/day)	–	–	0.95±0.08	–	0.64±0.06	–
NAC intake (mg/kg BW/day)	–	–	–	8.32±0.70	–	6.00±0.49
Absolute liver weight (g)	8.89±0.55	12.19±0.82**	8.96±0.75	8.94±1.25	12.61±1.21**	11.31±1.08**
Relative liver weight (% BW)	3.17±0.11	5.94±0.31**	3.13±0.08	3.32±0.54	6.10±0.43**	5.81±0.19**

Values are expressed as mean ± SD.

* $P < 0.05$ or ** $P < 0.01$ compared with control group (Dunnett's or Steel's test).

Table 3. The result of blood biochemistry of rats given PBO, APO and/or NAC for 8 weeks after DEN initiation

Groups	DEN-alone	PBO	APO	NAC	PBO+APO	PBO+NAC
Number of rats	12	11	12	12	15	10
Total protein (g/dl)	6.62 ± 0.22	7.42 ± 0.21**	6.73 ± 0.26	6.72 ± 0.23	7.66 ± 0.36**	7.52 ± 0.30**
Albumin (g/dl)	4.73 ± 0.16	5.55 ± 0.18**	4.75 ± 0.13	4.74 ± 0.13	5.64 ± 0.14**	5.62 ± 0.19**
AST (GOT) (IU/l)	69.08 ± 5.05	60.64 ± 5.59*	69.50 ± 3.48	68.36 ± 4.06	61.71 ± 5.65*	59.00 ± 8.51*
ALT (GPT) (IU/l)	43.83 ± 4.15	43.55 ± 3.39	44.25 ± 4.37	45.58 ± 11.97	45.07 ± 3.38	44.20 ± 3.85
ALP (IU/l)	937.92 ± 70.30	951.00 ± 82.39	936.75 ± 84.79	1020.58 ± 249.03	972.07 ± 167.62	896.90 ± 74.38
Creatinin (mg/dl)	0.34 ± 0.05	0.30 ± 0.04	0.33 ± 0.05	0.32 ± 0.04	0.30 ± 0.00	0.29 ± 0.03
Urea nitrogen (mg/dl)	15.75 ± 1.48	22.36 ± 1.12**	15.83 ± 1.11	14.83 ± 1.03	21.27 ± 1.39**	23.50 ± 1.58**
Glucose (mg/dl)	192.75 ± 27.64	147.45 ± 17.87**	199.00 ± 34.47	176.50 ± 27.58	139.13 ± 21.54**	140.10 ± 18.45**
Triglyceride (mg/dl)	134.33 ± 25.00	30.91 ± 6.24**	112.33 ± 19.98	104.92 ± 22.66	38.93 ± 38.56**	24.60 ± 4.84**
Total cholesterol (mg/dl)	68.83 ± 3.13	103.18 ± 7.26**	74.67 ± 4.31*	78.67 ± 16.00*	110.40 ± 14.70**	111.10 ± 6.69**

Values are expressed as mean ± SD.

* $P < 0.05$ or ** $P < 0.01$ compared with control group (Dunnett's or Steel's test).

Table. 4. GST-P-positive foci, and Ki-67 and TUNEL positive cell ratio in the liver of rats given PBO, APO and/or NAC for 8 weeks after DEN initiation

Groups	DEN-alone	PBO	APO	NAC	PBO+APO	PBO+NAC
Number of rats	12	11	12	12	15	10
GST-P positive foci						
Numbers (No./cm ²)	8.04± 2.53	23.79± 8.75**	7.97± 1.66	8.46± 2.15	17.82± 4.22**	17.85± 3.59**
Areas (mm ² /cm ²)	0.42± 0.14	1.82± 0.69**	0.42± 0.08	0.41± 0.12	1.66± 0.75**	1.75± 0.72**
Ki-67 positive cells (%)	4.89±0.55	12.19±0.82**	4.96±0.75	5.04±1.25	12.61±1.21**	11.31±1.08**
Caspase-3 positive cells (%)	1.17±0.11	3.94±0.31**	1.13±0.08	1.32±0.54	4.10±0.43**	3.81±0.19**

Values are expressed as mean ± S.D.

***P* < 0.01 compared with control group (Dunnett's or Steel's test).

Table 5. Changes of transcript expression in the liver of rats given PBO, APO and/or NAC for 8 weeks after DEN initiation

Genes	Group					
	DEN-alone	PBO	APO	NAC	PBO+APO	PBO+NAC
Drug metabolizing enzymes						
Cyp1a1	1.03±0.31	330.19±116.78**	1.02±0.33	1.19±0.64	352.45±104.01**	348.38±284.67**
Cyp2b1/2	1.03±0.29	298.74±21.86**	1.06±0.29	1.08±0.63	283.34±30.41**	279.17±39.42**
Antioxidant enzymes						
Nqo1	1.01±0.12	4.69±0.53**	1.08±0.10	1.20±0.29	6.93±1.68**	6.10±1.68**
Gpx2	1.03±0.27	45.58±5.81**	0.84±0.09	4.51±8.07	48.30±7.54**	40.31±7.23**
NOX-related factors						
Cybb	1.01±0.15	0.98±0.15	1.16±0.26	1.52±0.84	1.24±0.36	1.60±0.15
Rac1	1.01±0.13	1.01±0.04	1.01±0.07	1.13±0.20	0.99±0.16	1.04±0.13

Values of mRNA expression level (normalized by *Actb*) are expressed as mean ± S.D. (N=6).

** $P < 0.01$ compared with control group (Dunnett's or Steel's test).