

Table 1. Hematological parameters of main group rats exposed to NaDCC.

Sex	Male				Female			
Concentration (mg/m ³)	0	0.8	4	20	0	0.8	4	20
WBC (x10 ³ /μL)	4.33±0.43	3.51±0.83	3.22±0.65	3.07±0.65	2.99±0.84	2.65±0.36	2.61±0.42	2.28±0.42
RBC (x10 ⁶ /μL)	8.21±0.21	8.21±0.16	8.21±0.17	7.99±0.66	8.62±0.26	8.65±0.26	8.53±0.25	8.41±0.10
Hb (g/dL)	14.90±0.12	15.02±0.33	14.92±0.19	14.64±1.03	15.46±0.58	15.42±0.34	15.20±0.35	15.06±0.15
HCT (%)	43.08±0.99	42.88±0.69	42.48±0.40	41.28±3.32	43.22±1.27	43.46±1.15	42.82±1.20	42.24±0.45
MCV (fL)	52.50±0.62	52.26±0.41	51.72±0.75	51.68±0.16	50.14±0.40	50.22±0.44	50.20±0.60	50.20±0.21
MCH (g/dL)	18.16±0.49	18.26±0.30	18.16±0.31	18.36±0.33	17.92±0.29	17.84±0.24	17.82±0.18	17.90±0.07
MCHC (g/dL)	34.60±0.94	34.94±0.71	35.14±0.44	35.50±0.58	35.76±0.67	35.52±0.29	35.50±0.19	35.64±0.17
PLT (x10 ³ /μL)	860.20±82.80	852.60±19.71	825.00±28.68	685.40±43.24	674.60±41.33	726.60±64.55	702.40±41.09	618.80±180.06
NEU (%)	26.88±9.72	21.74±6.30	20.04±4.40	22.66±6.45	22.56±3.64	22.94±5.49	22.24±4.25	19.00±3.72
LYM (%)	69.48±9.71	75.06±6.68	76.54±4.80	74.06±6.04	71.52±3.95	72.80±4.81	73.24±4.51	76.32±3.40
MON (%)	1.80±0.46	1.32±0.52	1.60±0.48	1.80±0.44	3.14±0.74	2.20±0.44	1.92±0.62	2.20±0.49
EOS (%)	0.90±0.37	1.18±0.28	1.16±0.23	0.86±0.27	1.56±0.30	1.38±0.41	1.80±0.40	1.56±0.42
BAS (%)	0.28±0.16	0.16±0.09	0.14±0.05	0.18±0.13	0.16±0.05	0.16±0.05	0.32±0.13	0.18±0.08
NEU (x10 ³ /μL)	1.14±0.34	0.76±0.36	0.66±0.18	0.68±0.13	0.68±0.19	0.58±0.08	0.60±0.12	0.44±0.05
LYM (x10 ³ /μL)	3.03±0.69	2.62±0.57	2.47±0.56	2.30±0.58	2.14±0.62	1.94±0.37	1.91±0.37	1.75±0.36
MON (x10 ³ /μL)	0.08±0.02	0.05±0.03	0.05±0.02	0.06±0.02	0.10±0.05	0.06±0.02	0.05±0.02	0.05±0.02
EOS (x10 ³ /μL)	0.04±0.01	0.04±0.01	0.04±0.00	0.02±0.01	0.04±0.01	0.04±0.01	0.05±0.01	0.03±0.01
BAS (x10 ³ /μL)	0.01±0.01	0.00±0.01	0.00±0.00	0.01±0.01	0.00±0.01	0.01±0.01	0.01±0.00	0.00±0.00
RET (%)	3.57±0.35	3.37±0.07	3.35±0.21	3.01±0.29**	2.09±0.35	2.13±0.22	2.27±0.28	2.08±0.10
RETA (x10 ⁹ /L)	292.82±31.58	276.74±7.63	274.94±13.17	241.06±31.98**	180.18±24.81	184.04±17.98	193.78±22.01	174.62±8.33
APTT (sec)	16.98±0.62	17.04±0.55	17.44±0.57	17.80±0.79	16.43±0.90	16.50±0.69	16.38±0.87	16.72±1.75
PT (sec)	10.20±0.26	10.34±0.09	10.50±0.44	11.46±0.38**	9.95±0.31	10.30±0.19	10.38±0.41	11.20±0.47**

The values are expressed as mean ± SD (n=5 males and 5 females per group), ** = Dunnett LSD Test Significant at the 0.01 level

Table 2. Blood chemical parameters of main group male rats exposed to NaDCC.

Sex	Male				Female			
Concentration (mg/m ³)	0	0.8	4	20	0	0.8	4	20
Na (mmol/L)	142.53±1.32	141.38±1.05	141.78±1.08	140.96±1.08	142.05±0.98	142.58±0.80	142.42±1.60	142.40±0.92
K (mmol/L)	4.60±0.12	4.44±0.17	4.52±0.31	4.28±0.32	4.23±0.25	4.06±0.17	3.96±0.26	4.10±0.25
Cl (mmol/L)	99.78±0.33	100.12±1.01	99.80±0.62	99.44±0.64	102.40±0.93	102.62±0.94	102.84±0.91	103.22±0.84
TP (g/dL)	5.83±0.05	5.74±0.15	5.70±0.12	5.68±0.16	5.85±0.10	5.84±0.05	5.76±0.18	5.76±0.13
ALB (g/dL)	3.98±0.05	3.92±0.04	3.94±0.09	3.90±0.07	3.90±0.00	3.94±0.05	3.88±0.13	3.86±0.09
CREA (mg/dl)	0.41±0.02	0.41±0.03	0.42±0.04	0.41±0.02	0.41±0.02	0.43±0.02	0.42±0.02	0.42±0.02
BUN (mg/dl)	19.83±3.79	20.32±1.82	19.40±2.73	19.62±2.93	19.48±1.20	19.30±2.02	17.72±0.88	18.88±1.80
GLU (mg/dL)	151.13±8.22	156.10±19.44	157.60±13.64	156.72±16.27	143.20±19.74	135.68±19.50	129.22±15.87	123.04±10.64
Ca (mg/dl)	10.15±0.13	10.08±0.15	10.08±0.29	10.12±0.22	9.90±0.16	10.10±0.14	10.04±0.11	9.98±0.13
IP (mg/dl)	8.43±0.43	8.08±0.34	8.18±0.33	8.18±0.60	6.88±0.62	6.74±0.18	6.64±0.35	6.80±0.22
TBIL (mg/dl)	0.18±0.02	0.19±0.01	0.18±0.02	0.19±0.03	0.20±0.02	0.19±0.01	0.19±0.01	0.18±0.01
TCHO (mg/dl)	56.10±3.97	66.68±3.00*	67.72±2.71**	65.64±7.79**	95.80±4.62	92.04±5.22	92.86±4.98	91.18±4.99
TG (mg/dl)	53.18±20.87	50.76±7.21	56.96±14.94	35.72±14.48	77.38±35.26	56.56±18.35	70.24±33.07	41.48±22.01
AST (IU/L)	79.90±5.95	81.88±11.80	84.36±8.80	86.44±7.39	75.50±11.26	74.36±6.58	76.36±4.05	82.04±6.39
ALT (IU/L)	60.45±2.74	54.94±7.25	68.96±9.74	55.74±6.00	58.15±4.18	58.00±5.82	57.90±3.63	57.06±7.43
ALP (IU/L)	1022.95±111.05	985.30±36.53	949.58±39.28	949.00±48.75	575.15±52.79	564.84±35.50	574.76±63.59	622.76±22.23
LDH (IU/L)	902.55±289.03	1067.26±591.82	996.78±500.82	856.36±420.07	570.73±364.81	448.36±249.98	439.80±184.22	444.62±250.48
CPK (U/L)	315.53±77.43	367.76±152.87	351.18±133.88	294.46±95.01	207.53±83.46	177.58±66.55	174.92±43.49	179.40±58.30
A/G ratio	2.15±0.06	2.18±0.11	2.24±0.09	2.20±0.10	1.98±0.15	2.10±0.00	2.08±0.08	2.04±0.09

The values are expressed as mean ± SD (n=5 males per group), * = Dunnett Test Significant at the 0.05 level, ** = Dunnett Test Significant at the 0.01 level

Table 3. Absolute and relative organ weights of main group rats exposed to NaDCC.

Sex	Male				Female			
Concentration (mg/m ³)	0	0.8	4	20	0	0.8	4	20
Absolute organ weight (g)								
Brain	1.77±0.05	1.79±0.01	1.76±0.03	1.71±0.02	1.67±0.07	1.72±0.04	1.69±0.05	1.70±0.03
Heart	0.61±0.02	0.60±0.01	0.58±0.03	0.57±0.03*	0.50±0.03	0.49±0.03	0.48±0.03	0.48±0.02
Lung	0.38±0.05	0.37±0.01	0.36±0.02	0.37±0.04	0.30±0.02	0.31±0.01	0.30±0.02	0.30±0.02
Liver	5.84±0.43	5.42±0.20	5.46±0.42	4.85±0.52	4.02±0.11	3.98±0.17	3.85±0.24	3.74±0.12
Spleen	0.47±0.02	0.44±0.03	0.43±0.04	0.39±0.03**	0.36±0.03	0.34±0.01	0.34±0.02	0.33±0.01
Kidney	1.34±0.08	1.32±0.05	1.29±0.04	1.20±0.08	1.04±0.03	1.04±0.03	1.01±0.06	1.02±0.03
Relative organ weight (%)								
Brain	0.94±0.04	1.00±0.05	1.00±0.06	1.05±0.08	1.12±0.04	1.15±0.02	1.16±0.05	1.21±0.05 [#]
Heart	0.32±0.01	0.34±0.01	0.33±0.01	0.35±0.01*	0.33±0.02	0.33±0.02	0.33±0.02	0.34±0.02
Lung	0.20±0.03	0.21±0.01	0.20±0.01	0.22±0.01	0.20±0.01	0.21±0.01	0.21±0.01	0.21±0.02
Liver	3.09±0.10	3.02±0.04	3.07±0.13	2.97±0.16	2.69±0.08	2.68±0.14	2.64±0.11	2.66±0.11
Spleen	0.25±0.01	0.24±0.01	0.24±0.02	0.24±0.01	0.24±0.02	0.23±0.02	0.23±0.01	0.24±0.01
Kidney	0.71±0.02	0.74±0.03	0.73±0.03	0.74±0.05	0.70±0.02	0.70±0.02	0.69±0.02	0.73±0.02

The values are expressed as mean ± SD (n=5 males and 5 females per group)
* = Dunnett LSD Test Significant at the 0.05 level, ** = Dunnett LSD Test Significant at the 0.01 level
= Dunn Rank Sum Test Significant at the 0.05 level

Table 4. Histopathological assessment of the nasal cavity tissues and larynx in rats.

	Main group								Recovery group
Sex	Male				Female				Male
Concentration (mg/m³)	0	0.8	4	20	0.8	4	20	20	
Nasal cavity									
Number of animals	5	5	5	5	5	5	5	5	
Decreased goblet cells, respiratory epithelium	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(0)	
Minimal	0	0	0	2	0	0	0	0	
Mean ± SD	0.00±0.00	0.00±0.00	0.00±0.00	0.40±0.55	0.00±0.00	0.00±0.00	0.00±0.00	0.00±0.00	
Hypertrophy, goblet cells, respiratory epithelium	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	
Minimal	0	0	0	1	0	0	0	0	
Mean ± SD	0.00±0.00	0.00±0.00	0.00±0.00	0.20±0.45	0.00±0.00	0.00±0.00	0.00±0.00	0.00±0.00	
Degeneration, transitional epithelium	(0)	(0)	(0)	(4)	(0)	(0)	(0)	(0)	
Moderate	0	0	0	2	0	0	0	2	
Marked	0	0	0	2	0	0	0	2	
Mean ± SD	0.00±0.00	0.00±0.00	0.00±0.00	2.80±1.64	0.00±0.00	0.00±0.00	0.00±0.00	2.80±1.64	
Hyperplasia, transitional epithelium, focal	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(1)	
Mild	0	0	0	1	0	0	0	1	
Mean ± SD	0.00±0.00	0.00±0.00	0.00±0.00	0.40±0.89	0.00±0.00	0.00±0.00	0.00±0.00	0.40±0.89	
Larynx									
Number of animals	5	5	5	5	5	5	5	5	
Inflammation, mixed, epithelium	(0)	(0)	(1)	(1)	(0)	(0)	(0)	(2)	
Minimal	0	0	1	0	0	0	0	1	
Mild	0	0	0	1	0	0	0	0	
Moderate	0	0	0	0	0	0	0	1	
Mean ± SD	0.00±0.00	0.00±0.00	0.20±0.45	0.40±0.89	0.00±0.00	0.00±0.00	0.00±0.00	0.80±1.30	
Ulceration, epithelium	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	
Minimal	0	0	0	1	0	0	0	0	
Mean ± SD	0.00±0.00	0.00±0.00	0.00±0.00	0.00±0.45	0.00±0.00	0.00±0.00	0.00±0.00	0.00±0.00	
Squamous metaplasia, epithelium	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(2)	
Minimal	0	0	0	2	0	0	0	1	
Mild	0	0	0	0	0	0	0	1	
Mean ± SD	0.00±0.00	0.00±0.00	0.20±0.45	0.40±0.55	0.00±0.00	0.00±0.00	0.00±0.00	0.60±0.89	

0: unremarkable=no presence of histopathologic lesion; 1: minimal=lesions involving<10% of the tissue of each organ; 2: mild=lesions involving<10-30% of the tissue of each organ; 3: moderate=lesions involving<30-50% of the tissue of each organ; 4: marked=lesions involving<50-70% of the tissue of each organ; 5: severe=lesions involving>70% of the tissue of each organ