



SHRIRAM INSTITUTE FOR INDUSTRIAL RESEARCH

PROJECT NO. : TOX- 355 B
PRODUCT : NHH 44 Bt-COTTON SEEDS
STUDY : SUB CHRONIC ORAL TOICITY TOXICITY STUDY IN RATS
REPORT NO. : 0000469990
DATE : 18.5.2007

Confidential

TABLE - 4.01
MEAN BIOCHEMISTRY DATA OF MALE RATS
DURATION : 90 DAYS TIME : TERMINAL SACRIFICE

Animal Group	Blood Urea (mg %)	Glucose (mg %)	Total Protein (gm%)	S.G.P.T I.U	S.G.O.T I.U	Albumin (gm%)	Cholesterol (mg%)	SAP (U/L)	CHE (U/L)	T-BIL (mg/dl)	D-BIL (mg/dl)
Control (Corn Oil)	31.19 ± 6.46	167.30 ± 28.56	7.67 ± 0.49	40.43 ± 10.05	106.30 ± 14.28	4.40 ± 0.21	61.20 ± 14.90	126.50 ± 32.87	1358.3 ± 711.40	0.12 ± 0.02	0.06 ± 0.09
	NHH 44 Bt-Cotton seeds	33.68 ± 6.19	142.50 ± 39.08	7.84 ± 0.52	48.20 ± 7.33	122.17 ± 25.43	4.44 ± 0.27	59.60 ± 9.30	144.31 ± 34.30	1138.60 ± 576.43	0.11 ± 0.02
NHH 44 Non Bt-Cotton seeds		34.94 ± 5.12	141.60 ± 40.73	7.93 ± 0.50	47.28 ± 8.25	124.60 ± 22.38	4.52 ± 0.23	61.30 ± 12.37	147.00 ± 30.86	1526.60 ± 758.39	0.15 ± 0.03

* P ≤ 0.05



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TABLE - 4.02
MEAN BIOCHEMISTRY DATA OF FEMALE RATS
DURATION : 90 DAYS TIME : TERMINAL SACRIFICE

Animal Group	Blood Urea (mg %)	Glucose (mg %)	Total Protein (gm%)	S.G.P.T I.U	S.G.O.T I.U	Albumin (gm%)	Cholesterol (mg%)	SAP (U/L)	CHE (U/L)	T-BIL (mg/dl)	D-BIL (mg/dl)
Control (Corn Oil)	29.29	158.60	7.92	46.63	105.88	4.42	60.00	126.60	1134.90	0.16	0.04
	± 3.72	± 33.98	± 0.37	± 10.66	± 14.11	± 0.16	± 10.84	± 32.63	± 476.00	± 0.02	± 0.04
NHH 44 Bt-Cotton seeds	34.07	112.40	8.39	47.48	139.41	4.69	66.20	161.80	1069.3	0.15	0.10
	± 5.71	± 35.44	± 0.46	± 6.52	± 27.64	± 0.44	± 8.34	± 38.71	± 611.44	± 0.03	± 0.15
NHH 44 Non Bt-Cotton seeds	32.86	165.80	7.78	49.16	114.14	4.45	58.60	141.60	1182.20	0.08	0.04
	± 4.42	± 23.64	± 0.32	± 11.36	± 18.60	± 0.17	± 13.66	± 30.07	± 151.23	± 0.06	± 0.03

* P ≤ 0.05



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TABLE - 4.03
BIOCHEMISTRY DATA OF CONTROL GROUP OF MALE RATS
DURATION : 90 DAYS TIME : TERMINAL SACRIFICE

Animal No.	Sex	Blood Urea (mg %)	Glucose (mg %)	Total Protein (gm%)	S.G.P.T I.U	S.G.O.T I.U	Albumin (gm%)	Cholestero l (mg%)	SAP U/L	CHE (U/L)	T-BIL (mg/dl)	D-BIL (mg/dl)
1	M	31.6	166.0	8.2	38.6	96.0	4.6	48.0	117.0	802	0.13	0.04
2	M	25.3	200.0	7.5	36.1	87.2	4.4	56.0	90.0	2366	0.13	0.02
3	M	26.2	190.0	7.0	37.1	100.4	4.3	80.0	146.0	798	0.14	0.11
4	M	47.2	181.0	8.0	41.1	139.5	4.7	49.0	192.0	784	0.11	0.01
5	M	26.4	127.0	7.2	23.3	95.8	4.2	52.0	87.0	594	0.11	0.02
6	M	33.6	109.0	8.0	42.8	109.0	4.3	46.0	106.0	654	0.10	0.02
7	M	27.0	169.0	7.2	45.6	106.3	4.1	59.0	141.0	1969	0.13	0.01
8	M	34.5	190.0	7.7	63.6	113.2	4.4	58.0	157.0	2186	0.10	0.02
9	M	29.9	172.0	8.5	37.5	113.2	4.7	89.0	104.0	1404	0.10	0.29
10	M	30.2	169.0	7.4	38.6	102.4	4.3	75.0	125.0	2026	0.16	0.05
Mean ± S.D		31.19 ± 6.46	167.30 ± 28.56	7.67 ± 0.49	40.43 ± 10.05	106.30 ± 14.28	4.40 ± 0.21	61.20 ± 14.90	126.50 ± 32.87	1358.3 ± 711.40	0.12 ± 0.02	0.06 ± 0.09



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TABLE 4.04
BIOCHEMISTRY DATA OF CONTROL GROUP OF FEMALE RATS
DURATION : 90 DAYS TIME : TERMINAL SACRIFICE

Animal No.	Sex	Blood Urea (mg %)	Glucose (mg %)	Total Protein (gm%)	S.G.P.T I.U	S.G.O.T I.U	Albumin (gm%)	Cholesterol (mg%)	SAP U/L	CHE (U/L)	T-BIL (mg/dl)	D-BIL (mg/dl)
1	F	28.0	176.0	7.5	46.6	97.4	4.2	56.0	168.0	627	0.13	0.01
2	F	35.0	194.0	7.9	65.1	118.8	4.5	60.0	164.0	769	0.18	0.01
3	F	31.5	163.0	8.6	42.3	99.1	4.7	48.0	119.0	690	0.17	0.02
4	F	25.6	199.0	7.7	40.3	90.3	4.5	55.0	91.0	778	0.19	0.01
5	F	27.0	128.0	7.7	27.6	95.6	4.3	52.0	92.0	927	0.18	0.04
6	F	27.2	169.0	8.0	51.5	109.3	4.2	58.0	145.0	2086	0.16	0.04
7	F	26.2	190.0	7.5	41.6	104.9	4.3	80.0	150.0	1262	0.16	0.14
8	F	30.1	103.0	8.3	46.7	92.9	4.5	77.0	148.0	1653	0.16	0.05
9	F	35.9	114.0	8.3	43.7	114.6	4.5	50.0	111.0	1434	0.15	0.01
10	F	26.4	150.0	7.7	60.9	135.9	4.5	64.0	78.0	1123	0.15	0.04
Mean ± S.D		29.29 ± 3.72	158.60 ± 33.98	7.92 ± 0.37	46.63 ± 10.66	105.88 ± 14.11	4.42 ± 0.16	60.00 ± 10.84	126.60 ± 32.63	1134.90 ± 476.00	0.16 ± 0.02	0.04 ± 0.04



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TABLE - 4.05
BIOCHEMISTRY DATA OF (NHH 44 Bt-COTTON SEEDS) OF MALE RATS
DURATION : 90 DAYS TIME : TERMINAL SACRIFICE

Animal No.	Sex	Blood Urea (mg %)	Glucose (mg %)	Total Protein (gm%)	S.G.P.T I.U	S.G.O.T I.U	Albumin (gm%)	Cholesterol (mg%)	SAP U/L	CHE (U/L)	T-BIL (mg/dl)	D-BIL (mg/dl)
1	M	24.8	146.0	7.2	52.3	128.5	4.3	63.0	73.1	538	0.08	0.05
2	M	28.3	179.0	7.3	43.0	98.2	4.1	56.0	164.0	758	0.12	0.04
3	M	36.4	160.0	7.5	49.8	93.6	4.2	56.0	158.0	545	0.11	0.49
4	M	46.1	182.0	7.9	39.8	137.5	4.7	48.0	189.0	575	0.12	0.05
5	M	36.1	172.0	7.9	43.3	156.5	4.6	59.0	177.0	759	0.11	0.00
6	M	33.4	107.0	7.9	44.2	106.8	4.3	46.0	107.0	1815	0.12	0.01
7	M	29.9	102.0	7.8	42.5	89.6	4.3	77.0	145.0	1088	0.15	0.01
8	M	33.0	188.0	7.6	64.8	112.9	4.4	57.0	156.0	1866	0.11	0.02
9	M	29.2	101.0	8.3	50.3	140.5	4.5	68.0	126.0	1681	0.10	0.03
10	M	39.6	88.0	9.0	52.0	157.6	5.0	66.0	148.0	1761	0.11	0.03
Mean ± S.D		33.68 ± 6.19	142.50 ± 39.08	7.84 ± 0.52	48.20 ± 7.33	122.17 ± 25.43	4.44 ± 0.27	59.60 ± 9.30	144.31 ± 34.30	1138.60 ± 576.43	0.11 ± 0.02	0.07 ± 0.15



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TABLE - 4.06
BIOCHEMISTRY DATA OF (NHH 44 Bt-COTTON SEEDS) OF FEMALE RATS
DURATION : 90 DAYS TIME : TERMINAL SACRIFICE

Animal No.	Sex	Blood Urea (mg %)	Glucose (mg %)	Total Protein (gm%)	S.G.P.T I.U	S.G.O.T I.U	Albumin (gm%)	Cholesterol (mg%)	SAP U/L	CHE (U/L)	T-BIL (mg/dl)	D-BIL (mg/dl)
1	F	44.5	78.0	7.9	51.8	140.0	4.8	77.0	198.0	764	0.13	0.04
2	F	27.8	113.0	8.1	41.6	116.3	4.8	71.0	208.0	543	0.13	0.05
3	F	28.9	88.0	8.1	56.0	195.5	4.4	70.0	205.0	921	0.17	0.04
4	F	34.2	134.0	8.9	38.0	101.9	5.2	53.0	126.0	2040	0.12	0.04
5	F	41.6	107.0	8.7	47.4	156.5	3.7	55.0	178.0	568	0.16	0.02
6	F	37.8	78.0	8.8	48.0	151.6	4.9	63.0	145.0	631	0.16	0.02
7	F	30.1	97.0	8.3	51.3	139.9	4.6	68.0	134.0	545	0.11	0.48
8	F	35.4	87.0	8.6	56.6	135.8	4.8	60.0	193.0	2166	0.15	0.01
9	F	30.0	164.0	8.9	44.3	151.6	5.2	68.0	103.0	1396	0.19	0.28
10	F	30.4	178.0	7.6	39.8	105.0	4.5	77.0	128.0	1119	0.17	0.04
Mean ± S.D		34.07 ± 5.71	112.40 ± 35.44	8.39 ± 0.46	47.48 ± 6.52	139.41 ± 27.64	4.69 ± 0.44	66.20 ± 8.34	161.80 ± 38.71	1069.3 ± 611.44	0.15 ± 0.03	0.10 ± 0.15



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TABLE - 4.07
BIOCHEMISTRY DATA OF (NHH 44 NON Bt-COTTON SEEDS) OF MALE RATS
DURATION : 90 DAYS TIME : TERMINAL SACRIFICE

Animal No.	Sex	Blood Urea (mg %)	Glucose (mg %)	Total Protein (gm%)	S.G.P.T I.U	S.G.O.T I.U	Albumin (gm%)	Cholesterol (mg%)	SAP U/L	CHE (U/L)	T-BIL (mg/dl)	D-BIL (mg/dl)
1	M	28.7	170.0	8.3	36.4	111.9	4.6	87.0	104.0	2388	0.16	0.03
2	M	36.3	160.0	7.4	49.1	93.6	4.2	54.0	157.0	1455	0.18	0.01
3	M	45.9	182.0	7.8	41.4	136.1	4.7	47.0	188.0	684	0.16	0.01
4	M	35.4	170.0	7.8	43.1	154.0	4.6	59.0	175.0	777	0.17	0.01
5	M	33.5	106.0	7.8	44.0	106.9	4.3	45.0	108.0	741	0.10	0.01
6	M	33.2	184.0	7.5	63.6	112.3	4.4	56.0	155.0	1750	0.13	0.04
7	M	30.5	96.0	8.0	49.0	135.9	4.4	67.0	126.0	1963	0.14	0.01
8	M	39.7	86.0	8.8	50.7	153.9	4.9	65.0	146.0	1632	0.18	0.05
9	M	36.3	93.0	8.6	56.3	142.0	4.8	61.0	187.0	2818	0.17	0.03
10	M	29.9	169.0	7.3	39.2	99.4	4.3	72.0	124.0	1058	0.08	0.04
Mean ± S.D		34.94 ± 5.12	141.60 ± 40.73	7.93 ± 0.50	47.28 ± 8.25	124.60 ± 22.38	4.52 ± 0.23	61.30 ± 12.37	147.00 ± 30.86	1526.60 ± 758.39	0.15 ± 0.03	0.02 ± 0.02



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TABLE - 4.08
BIOCHEMISTRY DATA OF (NHH 44 NON Bt-COTTON SEEDS) OF FEMALE RATS
DURATION : 90 DAYS TIME : TERMINAL SACRIFICE

Animal No.	Sex	Blood Urea (mg %)	Glucose (mg %)	Total Protein (gm%)	S.G.P.T I.U	S.G.O.T I.U	Albumin (gm%)	Cholesterol (mg%)	SAP U/L	CHE (U/L)	T-BIL (mg/dl)	D-BIL (mg/dl)
1	F	28.8	170.0	7.4	42.0	103.4	4.4	71.0	126.0	1094	0.06	0.03
2	F	33.4	105.0	7.9	48.3	106.6	4.3	45.0	106.0	1224	0.12	0.06
3	F	27.7	170.0	8.3	41.0	114.6	4.7	85.0	103.0	1053	0.02	0.01
4	F	36.1	157.0	7.5	53.5	93.9	4.2	53.0	160.0	1259	0.07	0.03
5	F	31.9	188.0	7.8	68.8	112.6	4.4	56.0	157.0	1305	0.24	0.12
6	F	32.9	161.0	7.5	45.5	153.1	4.5	53.0	171.0	1031	0.06	0.02
7	F	32.0	167.0	8.3	38.8	98.1	4.6	47.0	115.0	1025	0.09	0.05
8	F	43.5	180.0	7.9	46.7	140.0	4.7	46.0	191.0	1120	0.04	0.02
9	F	30.3	173.0	7.5	38.1	104.9	4.3	75.0	127.0	1509	0.04	0.02
10	F	32.0	187.0	7.7	68.9	114.2	4.4	55.0	160.0	1202	0.09	0.05
Mean ± S.D		32.86 ± 4.42	165.80 ± 23.64	7.78 ± 0.32	49.16 ± 11.36	114.14 ± 18.60	4.45 ± 0.17	58.60 ± 13.66	141.60 ± 30.07	1182.20 ± 151.23	0.08 ± 0.06	0.04 ± 0.03