

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

C Number:

Study Gender:

PWG Approval Date

PA41: Clinical Chemistry Summary

Test Compound: Sodium Tungstate Dihydrate

CAS Number: 10213-10-2

C03038-01

Both

See web page for date of PWG Approval

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary
Test Compound: Sodium Tungstate Dihydrate
CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

F1 Male

	Phase Day	Treatment Groups (mg/L)				
		0	125	250	500	1000
Urea Nitrogen (mg/dL)	SD 91	18.1 ± 0.5 (5) **	14.8 ± 0.5 (5) *	17.3 ± 0.3 (5)	17.6 ± 0.7 (5)	19.2 ± 0.4 (5)
Percent of Control			81.8	95.6	97.2	106.1
Creatinine (mg/dL)	SD 91	0.76 ± 0.02 (5)	0.76 ± 0.02 (5)	0.78 ± 0.01 (5)	0.72 ± 0.01 (5)	0.77 ± 0.01 (5)
Percent of Control			100.00	102.63	94.74	101.32
Glucose (mg/dL)	SD 91	156.1 ± 19.2 (5)	129.1 ± 4.0 (5)	142.5 ± 11.2 (5)	124.6 ± 2.8 (5)	127.4 ± 4.5 (5)
Percent of Control			82.7	91.3	79.8	81.6
Total Protein (g/dL)	SD 91	6.64 ± 0.04 (5)	6.67 ± 0.06 (5)	6.76 ± 0.09 (5)	6.75 ± 0.10 (5)	6.73 ± 0.07 (5)
Percent of Control			100.45	101.81	101.66	101.36
Globulin (g/dL)	SD 91	2.46 ± 0.05 (5) *	2.37 ± 0.03 (5)	2.48 ± 0.07 (5)	2.48 ± 0.05 (5)	2.37 ± 0.05 (5)
Percent of Control			96.34	100.81	100.81	96.34
A/G Ratio	SD 91	1.71 ± 0.04 (5) **	1.82 ± 0.04 (5)	1.73 ± 0.05 (5)	1.72 ± 0.02 (5)	1.85 ± 0.03 (5)
Percent of Control			106.46	101.54	100.95	108.24
Albumin (g/dL)	SD 91	4.18 ± 0.03 (5)	4.30 ± 0.05 (5)	4.28 ± 0.05 (5)	4.27 ± 0.06 (5)	4.36 ± 0.03 (5)
Percent of Control			102.87	102.39	102.15	104.31
Cholesterol (mg/dL)	SD 91	120.4 ± 1.8 (5)	123.7 ± 4.5 (5)	139.1 ± 4.7 (5) *	130.9 ± 7.3 (5)	124.7 ± 6.4 (5)
Percent of Control			102.7	115.5	108.7	103.6
Triglyceride (mg/dL)	SD 91	139.1 ± 21.5 (5) *	109.8 ± 5.5 (5)	122.1 ± 10.7 (5)	134.7 ± 6.7 (5)	96.3 ± 16.0 (5)
Percent of Control			78.9	87.8	96.8	69.2
Alanine Aminotransferase (IU/L)	SD 91	51.2 ± 2.3 (5)	50.8 ± 2.5 (5)	49.2 ± 1.2 (5)	46.7 ± 2.8 (5)	50.7 ± 2.8 (5)
Percent of Control			99.2	96.1	91.2	99.0
Alkaline Phosphatase (IU/L)	SD 91	191.8 ± 3.2 (5) *	199.0 ± 8.8 (5)	205.8 ± 9.2 (5)	191.1 ± 8.8 (5)	222.7 ± 7.0 (5) *
Percent of Control			103.8	107.3	99.6	116.1

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary

Test Compound: Sodium Tungstate Dihydrate

CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

F1 Male

	Phase Day	Treatment Groups (mg/L)				
		0	125	250	500	1000
Creatine Kinase (IU/L)	SD 91	187.5 ± 34.7 (5)	171.9 ± 26.4 (5)	225.8 ± 55.2 (5)	179.8 ± 14.2 (5)	162.5 ± 16.5 (5)
Percent of Control			91.7	120.4	95.9	86.7
Sorbitol Dehydrogenase (IU/L)	SD 91	9.3 ± 0.6 (5)	10.2 ± 0.6 (5)	8.4 ± 0.6 (5)	8.0 ± 0.8 (5)	9.1 ± 0.5 (5)
Percent of Control			109.7	90.3	86.0	97.8
Bile salt/acids (μmol/L)	SD 91	27.2 ± 5.2 (5) *	36.5 ± 4.9 (5)	39.2 ± 2.5 (5)	34.0 ± 0.8 (5)	39.5 ± 3.8 (5)
Percent of Control			134.2	144.1	125.0	145.2

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary

Test Compound: Sodium Tungstate Dihydrate

CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

F1 Male

	Phase Day	Treatment Groups
		2000
Urea Nitrogen (mg/dL)	SD 91	24.4 ± 1.8 (4) *
Percent of Control		134.9
Creatinine (mg/dL)	SD 91	0.79 ± 0.03 (4)
Percent of Control		103.62
Glucose (mg/dL)	SD 91	130.6 ± 3.1 (4)
Percent of Control		83.7
Total Protein (g/dL)	SD 91	6.04 ± 0.07 (4) *
Percent of Control		90.93
Globulin (g/dL)	SD 91	1.86 ± 0.04 (4) *
Percent of Control		75.71
A/G Ratio	SD 91	2.26 ± 0.07 (4) *
Percent of Control		132.15
Albumin (g/dL)	SD 91	4.18 ± 0.06 (4)
Percent of Control		99.88
Cholesterol (mg/dL)	SD 91	119.1 ± 2.9 (4)
Percent of Control		98.9
Triglyceride (mg/dL)	SD 91	60.2 ± 4.7 (4)
Percent of Control		43.3
Alanine Aminotransferase (IU/L)	SD 91	61.6 ± 4.9 (4)
Percent of Control		120.3
Alkaline Phosphatase (IU/L)	SD 91	251.1 ± 24.1 (4)
Percent of Control		130.9

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary

Test Compound: Sodium Tungstate Dihydrate

CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

F1 Male

		Treatment Groups	
	Phase Day	2000	
Creatine Kinase (IU/L)	SD 91	161.4 ± 34.7	(4)
Percent of Control		86.1	
Sorbitol Dehydrogenase (IU/L)	SD 91	10.0 ± 0.3	(4)
Percent of Control		108.0	
Bile salt/acids (μmol/L)	SD 91	52.1 ± 8.4	(4)
Percent of Control		191.5	

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary
Test Compound: Sodium Tungstate Dihydrate
CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

F1 Female

	Phase Day	Treatment Groups (mg/L)				
		0	125	250	500	1000
Urea Nitrogen (mg/dL)	SD 91	16.8 ± 0.8 (5)	17.4 ± 0.7 (5)	18.0 ± 1.0 (5)	17.1 ± 0.4 (5)	16.3 ± 0.9 (5)
Percent of Control			103.6	107.1	101.8	97.0
Creatinine (mg/dL)	SD 91	0.75 ± 0.02 (5)	0.79 ± 0.01 (5)	0.79 ± 0.01 (5)	0.78 ± 0.01 (5)	0.76 ± 0.01 (5)
Percent of Control			105.33	105.33	104.00	101.33
Glucose (mg/dL)	SD 91	128.2 ± 6.9 (5)	122.0 ± 4.3 (5)	127.5 ± 5.2 (5)	128.8 ± 3.7 (5)	129.7 ± 4.5 (5)
Percent of Control			95.2	99.5	100.5	101.2
Total Protein (g/dL)	SD 91	6.79 ± 0.12 (5) *	6.94 ± 0.05 (5)	6.89 ± 0.10 (5)	6.81 ± 0.03 (5)	6.77 ± 0.06 (5)
Percent of Control			102.21	101.47	100.29	99.71
Globulin (g/dL)	SD 91	2.10 ± 0.08 (5) **	2.14 ± 0.07 (5)	2.14 ± 0.04 (5)	2.07 ± 0.05 (5)	2.04 ± 0.04 (5)
Percent of Control			101.90	101.90	98.57	97.14
A/G Ratio	SD 91	2.25 ± 0.08 (5) *	2.26 ± 0.10 (5)	2.23 ± 0.07 (5)	2.31 ± 0.09 (5)	2.32 ± 0.05 (5)
Percent of Control			100.44	99.04	102.47	103.26
Albumin (g/dL)	SD 91	4.69 ± 0.08 (5)	4.80 ± 0.04 (5)	4.75 ± 0.10 (5)	4.74 ± 0.05 (5)	4.73 ± 0.04 (5)
Percent of Control			102.35	101.28	101.07	100.85
Cholesterol (mg/dL)	SD 91	121.6 ± 6.5 (5)	132.3 ± 1.7 (5)	129.9 ± 5.5 (5)	116.1 ± 2.1 (5)	115.7 ± 3.3 (5)
Percent of Control			108.8	106.8	95.5	95.1
Triglyceride (mg/dL)	SD 91	64.6 ± 6.0 (5)	70.7 ± 8.6 (5)	80.6 ± 6.8 (5)	64.9 ± 4.6 (5)	78.3 ± 7.2 (5)
Percent of Control			109.4	124.8	100.5	121.2
Alanine Aminotransferase (IU/L)	SD 91	51.2 ± 2.8 (5)	45.1 ± 3.7 (5)	49.4 ± 1.6 (5)	46.9 ± 4.4 (5)	52.1 ± 6.3 (5)
Percent of Control			88.1	96.5	91.6	101.8
Alkaline Phosphatase (IU/L)	SD 91	159.4 ± 1.8 (5)	154.8 ± 5.9 (5)	149.1 ± 7.8 (5)	145.6 ± 8.5 (5)	150.7 ± 9.3 (5)
Percent of Control			97.1	93.5	91.3	94.5

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary
Test Compound: Sodium Tungstate Dihydrate
CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

F1 Female

		Treatment Groups (mg/L)				
	Phase Day	0	125	250	500	1000
Creatine Kinase (IU/L)	SD 91	146.3 ± 29.1 (5)	124.3 ± 11.4 (5)	169.2 ± 19.2 (5)	213.4 ± 70.4 (5)	184.7 ± 23.2 (5)
Percent of Control			85.0	115.7	145.9	126.2
Sorbitol Dehydrogenase (IU/L)	SD 91	7.7 ± 0.8 (5)	8.0 ± 0.9 (5)	8.5 ± 0.6 (5)	9.2 ± 0.6 (5)	9.6 ± 2.0 (5)
Percent of Control			103.9	110.4	119.5	124.7
Bile salt/acids (µmol/L)	SD 91	37.4 ± 5.9 (5)	37.2 ± 7.7 (5)	39.5 ± 6.1 (5)	34.3 ± 6.9 (5)	38.7 ± 4.2 (5)
Percent of Control			99.5	105.6	91.7	103.5

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary

Test Compound: Sodium Tungstate Dihydrate

CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

F1 Female

	Phase Day	Treatment Groups
		2000
Urea Nitrogen (mg/dL)	SD 91	21.8 ± 1.8 (4)
Percent of Control		129.7
Creatinine (mg/dL)	SD 91	0.78 ± 0.02 (4)
Percent of Control		103.33
Glucose (mg/dL)	SD 91	129.4 ± 13.0 (4)
Percent of Control		100.9
Total Protein (g/dL)	SD 91	6.38 ± 0.13 (4)
Percent of Control		94.01
Globulin (g/dL)	SD 91	1.82 ± 0.04 (4)
Percent of Control		86.51
A/G Ratio	SD 91	2.53 ± 0.06 (4)
Percent of Control		112.26
Albumin (g/dL)	SD 91	4.57 ± 0.11 (4)
Percent of Control		97.37
Cholesterol (mg/dL)	SD 91	117.8 ± 3.8 (4)
Percent of Control		96.8
Triglyceride (mg/dL)	SD 91	66.3 ± 3.4 (4)
Percent of Control		102.6
Alanine Aminotransferase (IU/L)	SD 91	50.0 ± 6.2 (4)
Percent of Control		97.7
Alkaline Phosphatase (IU/L)	SD 91	159.7 ± 7.6 (4)
Percent of Control		100.2

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary

Test Compound: Sodium Tungstate Dihydrate

CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

F1 Female

	Phase Day	Treatment Groups
		2000
Creatine Kinase (IU/L)	SD 91	199.9 ± 48.6 (4)
Percent of Control		136.6
Sorbitol Dehydrogenase (IU/L)	SD 91	8.3 ± 0.9 (4)
Percent of Control		107.1
Bile salt/acids (μmol/L)	SD 91	58.2 ± 7.9 (4)
Percent of Control		155.5

Study Number: C03038-01

Test Type: TOX

Route: Dosing in Water

Species/Strain: Rat/Harlan Sprague Dawley

PA41: Clinical Chemistry Summary

Test Compound: Sodium Tungstate Dihydrate

CAS Number: 10213-10-2

Date Report Requested: 05/06/2019

Time Report Requested: 15:09:53

Lab: NTP

LEGEND

Values given as mean $\pm$ SEM (N) of the litter means with Percent of Control calculated by (dosed group mean / control group mean) x 100

SD – Study Day

Statistical analysis performed using a bootstrapped Jonckheere test for trend and a Datta-Satten modified Wilcoxon test with Hommel adjustment for pairwise comparisons.

Statistical significance for the control group indicates a significant trend test

Statistical significance for a treatment group indicates a significant pairwise test compared to the vehicle control group

* Statistically significant at $P \leq 0.05$

** Statistically significant at $P \leq 0.01$

**** END OF REPORT ****