ToxGenie Frequency Analysis Report

Report Date: 2026-06-29 12:34:16

Study Title:	Reproduction Test
Analysis Method:	Chi-Square Test for MNPCE Observed
Study No.:	Test-135
Test Material:	Test Chemicals
Exposure Time:	24-hours
Test Medium:	Not Applicable

Table 1. Raw Data and Calculated Proportion for MNPCE Observed

Dose	Replicate No.	PCE Observed	MNPCE Observed	Proportion
Negative Control	1	4000	7	0.00175
Negative Control	2	4000	10	0.00250
Negative Control	3	4000	6	0.00150
Negative Control	4	4000	3	0.00075
Negative Control	5	4000	5	0.00125
64	1	4000	9	0.00225
64	3	4000	7	0.00175
64	2	4000	6	0.00150
64	5	4000	9	0.00225
64	4	4000	11	0.00275
160	5	4000	16	0.00400
160	1	4000	18	0.00450
160	3	4000	9	0.00225
160	4	4000	21	0.00525
160	2	4000	12	0.00300
400	1	4000	19	0.00475
400	5	4000	76	0.01900
400	4	4000	58	0.01450
400	3	4000	79	0.01975
400	2	4000	38	0.00950
MMC 0.5	1	4000	46	0.01150
MMC 0.5	4	4000	60	0.01500
MMC 0.5	3	4000	42	0.01050
MMC 0.5	2	4000	42	0.01050
MMC 0.5	5	4000	42	0.01050

Step 1. Outlier Detection (Data QA/QC) Analysis

Outlier detection is not applicable for Quantal (Proportional) Data.

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Step 2. Descriptive Statistics

Table 2. Descriptive Statistics for MNPCE Observed (Calculated Proportion)

Dose	Initial (N)	Affected (X)	Mean (%)	SD	SE
Negative Control	20000	31	0.00155	0.00065	0.00029
64	20000	42	0.00210	0.00049	0.00022
160	20000	76	0.00380	0.00119	0.00053
400	20000	270	0.01350	0.00638	0.00285
MMC 0.5	20000	232	0.01160	0.00195	0.00087

Abbreviations & Explanations:
- Initial (N) / Affected (X): Total number of exposed and responding organisms per dose group.
*- Mean (%): Average percentage (Affected/Initial * 100) across replicates.*
- SD: Standard Deviation.
- SE: Standard Error.

Step 1. Contingency Tables and Statistical Analysis

Table 3. Pairwise Comparison: Negative Control vs. 64

Index	Affected	Unaffected
Negative Control	31	19969
64	42	19958

Note: 'Affected' corresponds to the count of 'MNPCE Observed'; 'Unaffected' is calculated as ('PCE Observed' - 'MNPCE Observed').

Selected Method: Chi-square Test

Rationale: Chi-square test applied (Min expected: 36.500).

Chi-square: 1.6606

Two-sided P-value: 0.1975 (The result is considered Not Statistically Significant at alpha=0.05).

Table 4. Pairwise Comparison: Negative Control vs. 160

Index	Affected	Unaffected
Negative Control	31	19969
160	76	19924

Note: 'Affected' corresponds to the count of 'MNPCE Observed'; 'Unaffected' is calculated as ('PCE Observed' - 'MNPCE Observed').

Selected Method: Chi-square Test

Rationale: Chi-square test applied (Min expected: 53.500).

Chi-square: 18.9760

Two-sided P-value: < 0.0001 (The result is considered Statistically Significant at alpha=0.05).

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Table 5. Pairwise Comparison: Negative Control vs. 400

Index	Affected	Unaffected
Negative Control	31	19969
400	270	19730

Note: 'Affected' corresponds to the count of 'MNPCE Observed'; 'Unaffected' is calculated as ('PCE Observed' - 'MNPCE Observed').

Selected Method: Chi-square Test

Rationale: Chi-square test applied (Min expected: 150.500).

Chi-square: 191.2096

Two-sided P-value: < 0.0001 (The result is considered Statistically Significant at alpha=0.05).

Table 6. Pairwise Comparison: Negative Control vs. MMC 0.5

Index	Affected	Unaffected
Negative Control	31	19969
MMC 0.5	232	19768

Note: 'Affected' corresponds to the count of 'MNPCE Observed'; 'Unaffected' is calculated as ('PCE Observed' - 'MNPCE Observed').

Selected Method: Chi-square Test

Rationale: Chi-square test applied (Min expected: 131.500).

Chi-square: 154.6327

Two-sided P-value: < 0.0001 (The result is considered Statistically Significant at alpha=0.05).

Step 2. Final Summary and Conclusion

Table 7. Summary of Pairwise Comparisons

Control	Dose	Analysis Method	P-value	Result
Negative Control	64	Chi-square Test	0.1975	No significant difference from Negative Control
Negative Control	160	Chi-square Test	0.0000	Significant difference from Negative Control
Negative Control	400	Chi-square Test	0.0000	Significant difference from Negative Control
Negative Control	MMC 0.5	Chi-square Test	0.0000	Significant difference from Negative Control

Conclusion:

Significant increase in 'MNPCE Observed' incidence observed in: 160, 400, MMC 0.5 ($p < 0.05$).

Step 3. Dose-Response Graph

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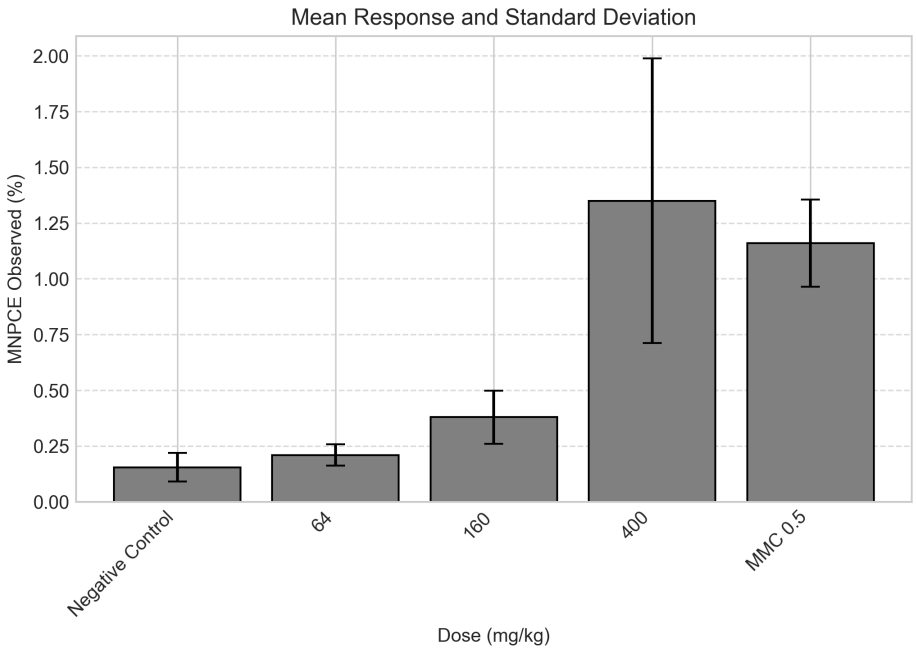

Figure 1. Dose-response trend for MNPCE Observed. Bars represent the mean and Standard Deviation (SD).

Analyst: ToxGenie