

Experiment Number: **G07002F**

Test Type: **Genetic Toxicology - In Vivo Alkaline Comet Assay**

Route: **Dosed feed**

Species/Strain: **Rat/Sprague Dawley**

**G01: In Vivo Alkaline Comet Summary Data**

Test Compound: **Zinc Carbonate**

CAS Number: **5263-02-5**

Date Report Requested: **02/27/2019**

Time Report Requested: **11:36:17**

**NTP Study Number:** G07002F

**Study Duration:** 12 month

**Male Study Result:** Positive

**Female Study Result:** Positive

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**Sex: Male; Diet: Zinc Deficient; Number of Treatments: 370; Time interval between final treatment and cell sampling: 24h**

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| Dose (ppm)                   | N | Blood 19 Days    |         | N | Blood 3 Months   |         |
|------------------------------|---|------------------|---------|---|------------------|---------|
|                              |   | Percent Tail DNA | p-Value |   | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 2.243 ± 0.299    |         | 5 | 3.252 ± 0.367    |         |
| 7                            | 5 | 1.906 ± 0.366    | 0.6440  | 5 | 2.279 ± 0.322    | 0.8480  |
| 3.5                          | 5 | 2.888 ± 0.264    | 0.1010  | 5 | 2.347 ± 0.521    | 0.9100  |
| Trend p-Value                |   | 0.0980           |         |   | 0.9280           |         |

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| Dose (ppm)                   | N | Blood 6 Months   |         | Blood 9 Months |                  |         |
|------------------------------|---|------------------|---------|----------------|------------------|---------|
|                              |   | Percent Tail DNA | p-Value | N              | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 1.460 ± 0.191    |         | 5              | 6.674 ± 1.054    |         |
| 7                            | 5 | 1.439 ± 0.268    | 0.5100  | 5              | 7.997 ± 1.288    | 0.4420  |
| 3.5                          | 5 | 1.943 ± 0.291    | 0.1200  | 5              | 5.795 ± 0.779    | 0.5210  |
| Trend p-Value                |   | 0.0980           |         |                | 0.7100           |         |

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| Dose (ppm)                   | N | Blood 12 Months  |          | N | Colon 12 Months  |         |
|------------------------------|---|------------------|----------|---|------------------|---------|
|                              |   | Percent Tail DNA | p-Value  |   | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 5.246 ± 0.588    |          | 5 | 12.544 ± 2.515   |         |
| 7                            | 5 | 7.782 ± 1.072    | 0.0560   | 5 | 7.028 ± 1.180    | 0.0560  |
| 3.5                          | 5 | 8.904 ± 0.391    | 0.0110 * | 5 | 8.195 ± 0.704    | 0.0660  |
| Trend p-Value                |   | 0.0070 *         |          |   | 0.1040           |         |

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| Dose (ppm)                   | N | Blood 19 Days    |         | N | Blood 3 Months   |         |
|------------------------------|---|------------------|---------|---|------------------|---------|
|                              |   | Percent Tail DNA | p-Value |   | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 2.243 ± 0.299    |         | 5 | 3.252 ± 0.367    |         |
| 250                          | 5 | 1.918 ± 0.314    | 0.7230  | 5 | 2.503 ± 0.414    | 0.7710  |
| 500                          | 5 | 1.767 ± 0.314    | 0.8050  | 5 | 2.348 ± 0.682    | 0.8490  |
| Trend p-Value                |   | 0.8610           |         |   | 0.8920           |         |

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| Dose (ppm)                   | N | Blood 6 Months   |         | N | Blood 9 Months   |         |
|------------------------------|---|------------------|---------|---|------------------|---------|
|                              |   | Percent Tail DNA | p-Value |   | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 1.460 ± 0.191    |         | 5 | 6.674 ± 1.054    |         |
| 250                          | 5 | 2.373 ± 0.239    | 0.0280  | 5 | 5.607 ± 0.654    | 0.6600  |
| 500                          | 5 | 3.082 ± 1.053    | 0.1040  | 5 | 6.123 ± 0.942    | 0.7460  |
| Trend p-Value                |   | 0.0410           |         |   | 0.6670           |         |

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| Dose (ppm)                   | N | Blood 12 Months  |          | N | Colon 12 Months  |         |
|------------------------------|---|------------------|----------|---|------------------|---------|
|                              |   | Percent Tail DNA | p-Value  |   | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 5.246 ± 0.588    |          | 5 | 12.544 ± 2.515   |         |
| 250                          | 5 | 8.150 ± 0.413    | 0.0450   | 5 | 14.844 ± 1.595   | 0.3950  |
| 500                          | 5 | 8.858 ± 1.798    | 0.0250 * | 5 | 19.355 ± 1.167   | 0.0260  |
| Trend p-Value                |   | 0.0190 *         |          |   | 0.0190 *         |         |

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Sex: Female; Diet: Zinc Deficient; Number of Treatments: 370; Time interval between final treatment and cell sampling: 24h

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| Dose (ppm)                   | N | Blood 3 Months   |         | N | Blood 6 Months   |         |
|------------------------------|---|------------------|---------|---|------------------|---------|
|                              |   | Percent Tail DNA | p-Value |   | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 4.042 ± 0.745    |         | 5 | 2.858 ± 0.258    |         |
| 7                            | 5 | 3.800 ± 0.669    | 0.5320  | 5 | 4.000 ± 0.933    | 0.5960  |
| 3.5                          | 5 | 6.789 ± 1.461    | 0.0490  | 5 | 2.840 ± 0.208    | 1.0000  |
| Trend p-Value                |   | 0.0430           |         |   | 0.5000           |         |



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| Dose (ppm)                   | N | Blood 9 Months   |          | N | Blood 12 Months  |          |
|------------------------------|---|------------------|----------|---|------------------|----------|
|                              |   | Percent Tail DNA | p-Value  |   | Percent Tail DNA | p-Value  |
| Vehicle Control <sup>1</sup> | 5 | 3.162 ± 0.432    |          | 5 | 7.974 ± 1.360    |          |
| 7                            | 5 | 4.798 ± 1.149    | 0.1300   | 5 | 6.221 ± 2.147    | 0.6420   |
| 3.5                          | 5 | 8.818 ± 1.189    | 0.0010 * | 5 | 17.324 ± 1.333   | 0.0010 * |
| Trend p-Value                |   | 0.0010 *         |          |   | 0.0050 *         |          |

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| Colon 12 Months              |   |                  |          |
|------------------------------|---|------------------|----------|
| Dose (ppm)                   | N | Percent Tail DNA | p-Value  |
| Vehicle Control <sup>1</sup> | 5 | 14.128 ± 0.993   |          |
| 7                            | 5 | 9.164 ± 1.007    | 0.1540   |
| 3.5                          | 5 | 4.474 ± 1.741    | 0.0040 * |
| Trend p-Value                |   | 0.0010 *         |          |

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| Dose (ppm)                   | N | Blood 3 Months   |         | N | Blood 6 Months   |         |
|------------------------------|---|------------------|---------|---|------------------|---------|
|                              |   | Percent Tail DNA | p-Value |   | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 4.042 ± 0.745    |         | 5 | 2.858 ± 0.258    |         |
| 250                          | 5 | 4.049 ± 0.580    | 0.6490  | 5 | 3.710 ± 0.584    | 0.2020  |
| 500                          | 5 | 3.040 ± 0.413    | 0.7360  | 5 | 3.002 ± 0.313    | 0.2450  |
| Trend p-Value                |   | 0.8770           |         |   | 0.4090           |         |

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| Dose (ppm)                   | N | Blood 9 Months   |         | N | Blood 12 Months  |         |
|------------------------------|---|------------------|---------|---|------------------|---------|
|                              |   | Percent Tail DNA | p-Value |   | Percent Tail DNA | p-Value |
| Vehicle Control <sup>1</sup> | 5 | 3.162 ± 0.432    |         | 5 | 7.974 ± 1.360    |         |
| 250                          | 5 | 3.130 ± 0.364    | 0.5510  | 5 | 7.324 ± 1.701    | 0.5890  |
| 500                          | 5 | 2.998 ± 0.209    | 0.6380  | 5 | 7.237 ± 1.068    | 0.6770  |
| Trend p-Value                |   | 0.6330           |         |   | 0.6470           |         |

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| <b>Colon 12 Months</b>       |          |                         |                |
|------------------------------|----------|-------------------------|----------------|
| <b>Dose (ppm)</b>            | <b>N</b> | <b>Percent Tail DNA</b> | <b>p-Value</b> |
| Vehicle Control <sup>1</sup> | 5        | 14.128 ± 0.993          |                |
| 250                          | 5        | 13.451 ± 1.395          | 1.0000         |
| 500                          | 5        | 19.037 ± 0.809          | 0.0090 *       |
| Trend p-Value                |          | 0.0170 *                |                |

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LEGEND

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CAS Number = Chemical Abstracts Service registry number

N = Number of subjects

Values given as Mean or Mean  $\pm$  Standard Error Mean

Pairwise comparison with the control group; values are significant at  $P \leq 0.025$  by Williams or Dunn's test

Dose-related trend; significant at  $P \leq 0.025$  by linear regression or Jonckheere's test

\* Statistically significant pairwise or trend test

1: Vehicle Control: 38 ppm Feed

**\*\* END OF REPORT \*\***