Chemical: Aldicarb

Formulation: Technical (998 A.I)


Reviewed By: Charles A. Bowen II
Title: Fishery Biologist
ORG: Ecological Effects Branch (EEB)

Test Type: Eight Day Acute Avian Dietary Study
A. Species - Japanese Quail

Reported Results:

\[ \text{LC}_{50} = 355 \text{ ppm} \]
\[ 95 \% \text{ C. L} \frac{294 - 422}{(294 - 422)} \]
\[ \text{NOEL} = 150 \text{ ppm} \]

Reviewer's Conclusions:

This bioassay is scientifically sound and demonstrates that technical aldicarb is highly toxic to upland game birds. This study will not fulfill the requirements for an eight day avian dietary study.
Methods and Materials:

Basic Subacute Test Method

Five or six geometrically arranged concentrations of technical-grade chemical were fed to Japanese quail of the same age for 5 days followed by at least 3 days of posttreatment observation for persistence of overt clinical signs. One pen containing 10 to 15 birds was used for each concentration and served as the basic statistical unit. Concentrations were spaced so that the mortality ranged from about 10 to 90 percent. For each test a number of control pens equal to the number of pesticide concentrations were used, and these pens served as common controls for all the concurrently tested compounds. A completely randomized design was used to assign birds and diets to pens. Food consumption was measured daily for two concentrations per pesticide, that is, second and fourth for five concentrations or second and fifth for six concentrations.

Toxicity statistics (LC₅₀, 95 percent confidence limits, and slopes of probit regression lines) were derived by probit analysis from tabulations of the deaths during each experiment. Correction for deaths of the controls was by Abbott's formula. Where groups of data were compared, one-way analysis of variance or the t-test was used when data were normally distributed; otherwise the two-tailed nonparametric Wilcoxon rank sum test was used. Mean separations were considered statistically acceptable at P ≤ 0.05. Individual LC₅₀s were considered significantly different when the 95 percent confidence limits (fiducial probability interval) did not overlap.

Test birds were the progeny of a randomly bred but genetically closed quail colony maintained at the Patuxent Wildlife Research Center, Laurel, Md. All tests were conducted in standard brooding batteries with heat thermostatically maintained at the appropriate temperature for the age of the chicks being tested. The light regimen was 24 h light and 0 h dark (24L:0D) during all the tests. Fresh feed (turkey starter mash) and water were provided daily. At the end of the pesticides exposure, both the toxic and the control feed were replaced by untreated feed. All the diets contained corn oil in the ratio of 2:98, by weight, which served as a diluent for treating feed with pesticide.

Experiment 1 - Age-Associated Response to Subacute Toxicity Testing

Aldicarb concentrations were tested concurrently at each age. The LC₅₀s, 95 percent confidence limits, slopes of dose-response lines (probit on log concentration) toxicity ratios, and relative toxic rankings were compared between ages. Food consumption and deaths at theoretically equipotent concentrations were evaluated and compared among the various test ages and pesticides.
Author's Results:

**JAPANESE QUAIL** *Coturnix C. japonica*

Sex: Mixed  
Age: 7 days  
Test-date: 30 April 1976

<table>
<thead>
<tr>
<th>Conc. (ppm)</th>
<th>Birds (n)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>60</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>150</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>212</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>300</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>424</td>
<td>10</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>600</td>
<td>10</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Statistical summary: LC50: 335 ppm  
95% CI: 294-422 ppm  
Slope: 8.0

<table>
<thead>
<tr>
<th>Conc. (ppm)</th>
<th>Birds (n)</th>
<th>Feed consumption, g/bird-day</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Control</td>
<td>60</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>212</td>
<td>10</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>424</td>
<td>10</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

EEB Statistical Validation: N. A.
Reviewer's Conclusions:

The conclusions drawn by the author are supported by the dose mortality data. Deviations from EPA's current guidelines for avian dietary studies are noted below:

1. lighting regimes were not reported.
2. Japhanese quail are not an acceptable test species.
3. Temperature and relative humidity regimes were not reported.
4. Gross pathology was not reported.
5. Feed consumption data was not reported for all groups tested.

Validation Status: Supplemental

Category repairability:

This study will not be re-examined due to the deficiencies cited above.
Chemical: Aldicarb

Formulation: Technical (99% A.I)


Reviewed By: Charles A. Bowen II

Title: Fishery Biologist

ORG: Ecological Effects Branch (EEB)

Test Type: Eight Day Acute Avian Dietary Study

A. Species - Japanese Quail

Reported Results: $LC_{50} = 542$ ppm \[ (451 - 849) \]

(No mortality at 200 ppm)

Reviewer's Conclusions:

This bioassay is scientifically sound and demonstrates that technical aldicarb moderately toxic to upland game birds. This study will not fulfill the requirements for an eight day avian dietary study.
Methods and Materials: See Japanese quail eight day avian dietary study (BOWOALOL).

Author's Results:

**JAPANESE QUAIL (Coturnixx c. Japonica)**
(cont.)

Sex: Mixed  
Age: 14 days  
Test-date: 16 April 1976

<table>
<thead>
<tr>
<th>Concen. (ppm)</th>
<th>Birds (n)</th>
<th>Deaths by test-day</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>60</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>200</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>263</td>
<td>10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>346</td>
<td>10</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>456</td>
<td>10</td>
<td>0</td>
<td>70</td>
</tr>
<tr>
<td>600</td>
<td>10</td>
<td>3 1</td>
<td>60</td>
</tr>
</tbody>
</table>

Statistical summary: LC50: 542 ppm  
95% CI: 451-849 ppm  
Slope: 5.8

<table>
<thead>
<tr>
<th>Concen. (ppm)</th>
<th>Birds (n)</th>
<th>Feed consumption, g/bird-day</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>60</td>
<td>10 10 9 11 10</td>
<td>0</td>
</tr>
<tr>
<td>263</td>
<td>10</td>
<td>6 7 10 14 13</td>
<td>10</td>
</tr>
<tr>
<td>456</td>
<td>10</td>
<td>4 5 7 17 9</td>
<td>40</td>
</tr>
</tbody>
</table>
Reviewer's Conclusions:

The conclusions drawn by the author are supported by the dose mortality data. Deviations from EPA's current guidelines for avian dietary studies are noted below:

1. Lighting regimes were not reported.
2. Japanese quail are not an acceptable test species.
3. Temperature and relative humidity regimes were not reported.
4. Gross pathology was not reported.
5. Food consumption data were not reported for all groups tested.

Validation Status: Supplemental

Category repairability:

This bioassay will not be re-evaluated due to the deficiencies cited above.
Chemical: Aldicarb

Formulation: Technical (99% A.I)


Reviewed By: Charles A. Bowen II

Title: Fishery Biologist

ORG: Ecological Effects Branch (EEB)

Test Type: Eight Day Acute Avian Dietary Study

A. Species - Japanese Quail

Reported Results:

\[ \text{LC}_{50} = 786 \text{ ppm} \]
\[ (664 - 996) \]

\[ \text{NOEL} = 400 \text{ ppm} \]

Reviewer’s Conclusions:

This bioassay is scientifically sound and demonstrates that technical aldicarb is moderately toxic to upland game birds. This study will not fulfill the requirements for a eight day avian dietary study.
Methods and Materials: See Japanese quail eight day avian dietary study (POWONL01).

Author's Results:

**JAPANESE QUAIL (Coturnixs c. Japonica)**

*cont.*

<table>
<thead>
<tr>
<th>Sex: Mixed</th>
<th>Age: 21 days</th>
<th>Test-date: 14 May 1976</th>
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</thead>
<tbody>
<tr>
<td>Conc. (ppm)</td>
<td>Birds (n)</td>
<td>Deaths by test-day</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Control</td>
<td>50</td>
<td>1</td>
</tr>
<tr>
<td>400</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>526</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>643</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>912</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>1200</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

Statistical summary: LC50: 786 ppm 95% CI: 664-996 ppm  Slope: 5.2

<table>
<thead>
<tr>
<th>Conc. (ppm)</th>
<th>Birds (n)</th>
<th>Feed consumption, g/bird-day</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Control</td>
<td>50</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>526</td>
<td>10</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>912</td>
<td>10</td>
<td>9</td>
<td>4</td>
</tr>
</tbody>
</table>
Reviewer's Conclusions:

The conclusions drawn by the author are supported by the dose mortality data. Deviations from EPA's current guidelines for avian dietary studies are noted below:

1. Lighting regimes were not reported.
2. Japanese quail are not an acceptable test species.
3. Temperature and relative humidity regimes were not reported.
4. Gross pathology was not reported.
5. Feed consumption data was not reported for all groups tested.

Validation Status: Supplemental

Category repairability:

This study will not be re-examined due to the deficiencies noted above.
Chemical: Aldicarb

Formulation: Technical (99% A.I)


Reviewed By: Charles A. Bowen II

Title: Fishery Biologist

ORG: Ecological Effects Branch (EEB)

Test Type: Eight Day Acute Avian Dietary Study

A. Species - Japanese Quail

Reported Results:

\[ \text{LC}_{50} = 247 \text{ ppm} \]

\[ 95 \% \text{ C. L} \]

\[ (151 - 397 \text{ ppm}) \]

Reviewer's Conclusions:

This bioassay is scientifically sound and demonstrates that technical aldicarb is highly toxic to upland game birds. This study will not fulfill the requirements for a eight day avian dietary study.
Methods and Materials: See Japanese quail eight day avian dietary study (BOWALO).

Author's Results:

**JAPANESE QUAIL (Coturnixs c. Japonica)**

Sex: Mixed  
Age: Hatchling  
Test-date: 2 April 1976

<table>
<thead>
<tr>
<th>Concentration (ppm)</th>
<th>Birds (n)</th>
<th>Deaths by test-day</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>53</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>150</td>
<td>11</td>
<td>2 1</td>
<td>27</td>
</tr>
<tr>
<td>203</td>
<td>11</td>
<td>4</td>
<td>36</td>
</tr>
<tr>
<td>274</td>
<td>12</td>
<td>3 3</td>
<td>50</td>
</tr>
<tr>
<td>370</td>
<td>11</td>
<td>3 3 1 1</td>
<td>73</td>
</tr>
<tr>
<td>500</td>
<td>11</td>
<td>7 2 1</td>
<td>91</td>
</tr>
</tbody>
</table>

Statistical summary: LC50: 247 ppm  
95% CI: 151-397 ppm  
Slope: 3.7

<table>
<thead>
<tr>
<th>Concentration (ppm)</th>
<th>Birds (n)</th>
<th>Feed consumption, g/bird-day</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>53</td>
<td>6 - 6 3 4</td>
<td>0</td>
</tr>
<tr>
<td>203</td>
<td>11</td>
<td>7 - 4 4 4</td>
<td>36</td>
</tr>
<tr>
<td>370</td>
<td>11</td>
<td>5 - 5 3 4</td>
<td>73</td>
</tr>
</tbody>
</table>
Reviewer's Conclusions:

The conclusions drawn by the author are supported by the dose mortality data. Deviations from EPA's current guidelines for avian dietary studies are noted below:

1. Lighting regimes were not reported.
2. Japanese quail are not an acceptable test species.
3. Temperature and relative humidity regimes were not reported.
4. Gross pathology was not reported.
5. Feed consumption data was not reported for all groups tested.

Validation Status: Supplemental

Category repairability:

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