Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**			
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**			
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**			
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture	**Age:**	

Sample ID:	02-6510-0693	**Code:**	50784602 dd	**Project:**	Herbicide
Sample Date:	13 Aug-18	**Material:**	Dicamba	**Source:**	BASF SE
Receipt Date:		**CAS (PC):**		**Station:**	
Sample Age:	n/a	**Client:**	CDM Smith - M. Wright		

029801 50784602 - measured daily dietary doses 'Day 15 Mortality' endpoint...
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.
The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
20-8588-9016	Adult Emergence Rate	Cochran-Armitage (N) Trend Test	✓	5.1	10	7.141		n/a	1
09-2768-7648	Adult Emergence Rate	Fisher Exact/Bonferroni-Holm Test		10	21	14.49		n/a	1
03-7297-8084	Day 15 Mortality	Cochran-Armitage (N) Trend Test	✓	5.1	10	7.141		n/a	1
03-2691-1240	Day 15 Mortality	Fisher Exact/Bonferroni-Holm Test		10	21	14.49		n/a	1
16-3345-0662	Larval Mortality	Fisher Exact/Bonferroni-Holm Test		21	>21	n/a		n/a	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	ug ai/larv	95% LCL	95% UCL	TU	S
02-5708-3865	Adult Emergence Rate	GLM: Log-Normal (Probit)		EC5	0.432	0.0761	0.956		1
				EC10	0.856	0.23	1.6		
			✓	EC25	2.69	1.37	3.99		
			✓	EC50	9.58	6.61	16.7		
13-4812-8022	Adult Emergence Rate	Trimmed Spearman-Kärber		EC50	14.5	12.2	17.3		1
09-0915-1188	Day 15 Mortality	GLM: Log-Normal (Probit)	✓	LC5	0.165	8.82E-05	0.759		1
			✓	LC10	0.545	0.00338	1.61		
				LC25	4.01	1.07	7.94		
				LC50	36.8	14.9	2030		

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Adult Emergence Rate Summary

Conc-ug ai/larv	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.806	0.686	0.925	0.750	0.833	0.028	0.048	5.97%	0.00%
1.3		3	0.778	0.658	0.897	0.750	0.833	0.028	0.048	6.19%	3.45%
2.6		3	0.778	0.347	1.000	0.583	0.917	0.100	0.173	22.30%	3.45%
5.1		3	0.722	0.291	1.000	0.583	0.917	0.100	0.173	24.02%	10.34%
10		3	0.583	0.583	0.583	0.583	0.583	0.000	0.000	0.00%	27.59%
21		3	0.222	0.103	0.342	0.167	0.250	0.028	0.048	21.65%	72.41%

Day 15 Mortality Summary

Conc-ug ai/larv	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.139	0.019	0.258	0.083	0.167	0.028	0.048	34.64%	0.00%
1.3		3	0.167	0.000	0.374	0.083	0.250	0.048	0.083	50.00%	3.23%
2.6		3	0.194	0.000	0.715	0.000	0.417	0.121	0.210	107.85%	6.45%
5.1		3	0.250	0.000	0.664	0.083	0.417	0.096	0.167	66.67%	12.90%
10		3	0.389	0.269	0.508	0.333	0.417	0.028	0.048	12.37%	29.03%
21		3	0.417	0.058	0.775	0.333	0.583	0.083	0.144	34.64%	32.26%

Larval Mortality Summary

Conc-ug ai/larv	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.056	0.000	0.175	0.000	0.083	0.028	0.048	86.60%	0.00%
1.3		3	0.056	0.000	0.175	0.000	0.083	0.028	0.048	86.60%	0.00%
2.6		3	0.056	0.000	0.175	0.000	0.083	0.028	0.048	86.60%	0.00%
5.1		3	0.139	0.000	0.570	0.000	0.333	0.100	0.173	124.90%	8.82%
10		3	0.139	0.000	0.455	0.000	0.250	0.074	0.127	91.65%	8.82%
21		3	0.139	0.000	0.378	0.083	0.250	0.056	0.096	69.28%	8.82%

Adult Emergence Rate Detail

Conc-ug ai/larv	Code	Rep 1	Rep 2	Rep 3
0	N	0.750	0.833	0.833
1.3		0.750	0.750	0.833
2.6		0.833	0.583	0.917
5.1		0.667	0.583	0.917
10		0.583	0.583	0.583
21		0.250	0.167	0.250

Day 15 Mortality Detail

Conc-ug ai/larv	Code	Rep 1	Rep 2	Rep 3
0	N	0.167	0.167	0.083
1.3		0.083	0.250	0.167
2.6		0.167	0.417	0.000
5.1		0.250	0.417	0.083
10		0.417	0.333	0.417
21		0.333	0.583	0.333

Larval Mortality Detail

Conc-ug ai/larv	Code	Rep 1	Rep 2	Rep 3
0	N	0.083	0.083	0.000
1.3		0.083	0.083	0.000
2.6		0.083	0.083	0.000
5.1		0.083	0.333	0.000
10		0.250	0.000	0.167
21		0.083	0.250	0.083

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Batch ID:	17-6444-2655	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**			
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**			
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**			
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture	**Age:**	

Sample ID:	18-3669-1172	**Code:**	50784602 dc	**Project:**	Herbicide
Sample Date:	13 Aug-18	**Material:**	Dicamba	**Source:**	BASF SE
Receipt Date:	17 Jun-19 17:33	**CAS (PC):**		**Station:**	
Sample Age:	n/a	**Client:**	CDM Smith - M. Wright		

029801 50784602 - measured diet concentrations 'Day 15 Mortality' endpoint…
The Trimmed Spearman-Karber method is inappropriate because the trim required is greater than 50%.
The Trimmed Spearman-Karber method cannot be completed due to insufficient data.

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	mg ai/kg	95% LCL	95% UCL	TU	S
11-0645-2795	Adult Emergence Rate	GLM: Log-Normal (Probit)		EC5	11.6	2.14	25.4		1
				EC10	22.8	6.33	42.1		
			✓	EC25	70.5	36.5	104		
			✓	EC50	247	171	426		
06-7537-8782	Adult Emergence Rate	Trimmed Spearman-Kärber		EC50	375	316	445		1
06-3835-8515	Day 15 Mortality	GLM: Log-Normal (Probit)	✓	LC5	4.49	0.0029	20.2		1
			✓	LC10	14.6	0.103	42.5		
				LC25	105	28.8	205		
				LC50	931	381	46600		

Adult Emergence Rate Summary

Conc-mg ai/kg	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.806	0.686	0.925	0.750	0.833	0.028	0.048	5.97%	0.00%
35.07		3	0.778	0.658	0.897	0.750	0.833	0.028	0.048	6.19%	3.45%
66.9		3	0.778	0.347	1.000	0.583	0.917	0.100	0.173	22.30%	3.45%
129.7		3	0.722	0.291	1.000	0.583	0.917	0.100	0.173	24.02%	10.34%
260.9		3	0.583	0.583	0.583	0.583	0.583	0.000	0.000	0.00%	27.59%
540		3	0.222	0.103	0.342	0.167	0.250	0.028	0.048	21.65%	72.41%

Day 15 Mortality Summary

Conc-mg ai/kg	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.139	0.019	0.258	0.083	0.167	0.028	0.048	34.64%	0.00%
35.07		3	0.167	0.000	0.374	0.083	0.250	0.048	0.083	50.00%	3.23%
66.9		3	0.194	0.000	0.715	0.000	0.417	0.121	0.210	107.85%	6.45%
129.7		3	0.250	0.000	0.664	0.083	0.417	0.096	0.167	66.67%	12.90%
260.9		3	0.389	0.269	0.508	0.333	0.417	0.028	0.048	12.37%	29.03%
540		3	0.417	0.058	0.775	0.333	0.583	0.083	0.144	34.64%	32.26%

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Adult Emergence Rate Detail

Conc-mg ai/kg	Code	Rep 1	Rep 2	Rep 3
0	N	0.750	0.833	0.833
35.07		0.750	0.750	0.833
66.9		0.833	0.583	0.917
129.7		0.667	0.583	0.917
260.9		0.583	0.583	0.583
540		0.250	0.167	0.250

Day 15 Mortality Detail

Conc-mg ai/kg	Code	Rep 1	Rep 2	Rep 3
0	N	0.167	0.167	0.083
35.07		0.083	0.250	0.167
66.9		0.167	0.417	0.000
129.7		0.250	0.417	0.083
260.9		0.417	0.333	0.417
540		0.333	0.583	0.333

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	09-2768-7648	**Endpoint:**	Adult Emergence Rate	**CETIS Version:**	CETISv1.9.5
Analyzed:	21 Oct-19 21:34	**Analysis:**	STP 2xK Contingency Tables	**Status Level:**	1

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**			
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**			
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**			
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture	**Age:**	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	10	21	14.49	

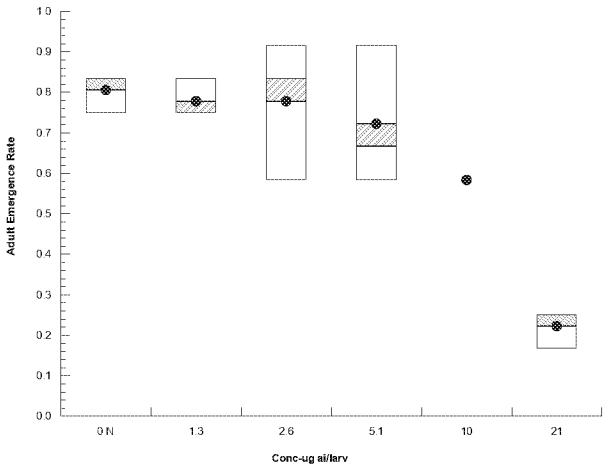
Fisher Exact/Bonferroni-Holm Test

Control vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control	1.3	0.500	Exact	1.0000	Non-Significant Effect
	2.6	0.500	Exact	1.0000	Non-Significant Effect
	5.1	0.290	Exact	0.8697	Non-Significant Effect
	10	0.036	Exact	0.1442	Non-Significant Effect
	21*	0.000	Exact	3.1E-06	Significant Effect

Data Summary

Conc-ug ai/larv	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	29	7	36	0.806	0.194	0.0%
1.3		28	8	36	0.778	0.222	3.45%
2.6		28	8	36	0.778	0.222	3.45%
5.1		26	10	36	0.722	0.278	10.3%
10		21	15	36	0.583	0.417	27.6%
21		8	28	36	0.222	0.778	72.4%

Graphics



Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	20-8588-9016	**Endpoint:**	Adult Emergence Rate	**CETIS Version:**	CETISv1.9.5
Analyzed:	21 Oct-19 21:34	**Analysis:**	STP 2xK Contingency Tables-Numerical Sc	**Status Level:**	1

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**			
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**			
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**			
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture	**Age:**	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	5.1	10	7.141	

Cochran-Armitage (N) Trend Test

Control vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control	1.3	0.291	Asymp	0.3863	Non-Significant Effect
	2.6	0.289	Asymp	0.3863	Non-Significant Effect
	5.1	0.836	Asymp	0.2017	Non-Significant Effect
	10*	2.379	Asymp	0.0087	Significant Effect
	21*	6.227	Asymp	<1.0E-37	Significant Effect

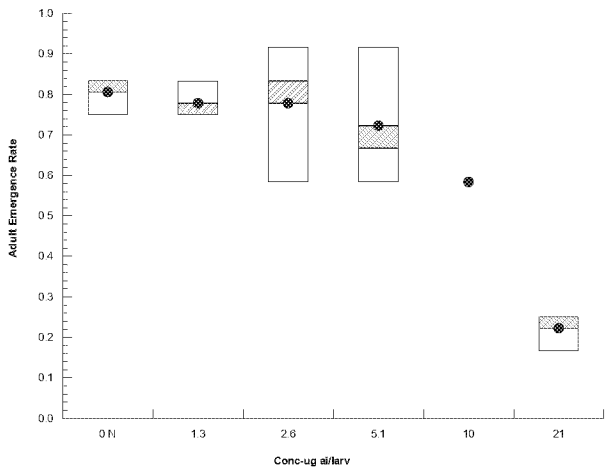
Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Overall Effect	Pearson Chi-Square Test	39.4	11.1	2.3E-07	Significant Overall Effect
Nonlinearity	Chi-Square Lack of Fit Test	0.608	9.49	0.9622	Non-Significant Lack of Linearity
Overdispersion	Tarone C(α) Binomial Overdispersion Test	1.28	1.64	0.1004	Non-Significant Overdispersion

Data Summary

Conc-ug ai/larv	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	29	7	36	0.806	0.194	0.0%
1.3		28	8	36	0.778	0.222	3.45%
2.6		28	8	36	0.778	0.222	3.45%
5.1		26	10	36	0.722	0.278	10.3%
10		21	15	36	0.583	0.417	27.6%
21		8	28	36	0.222	0.778	72.4%

Graphics



Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	03-2691-1240	**Endpoint:**	Day 15 Mortality	**CETIS Version:**	CETISv1.9.5
Analyzed:	21 Oct-19 21:33	**Analysis:**	STP 2xK Contingency Tables	**Status Level:**	1

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**			
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**			
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**			
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture	**Age:**	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C < T	10	21	14.49	

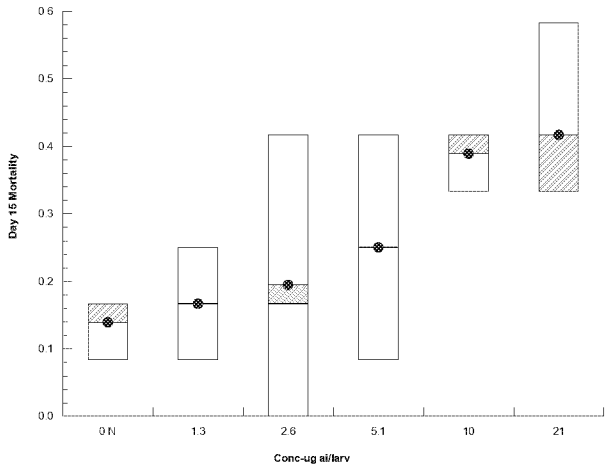
Fisher Exact/Bonferroni-Holm Test

Control vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control	1.3	0.500	Exact	0.5000	Non-Significant Effect
	2.6	0.377	Exact	0.7531	Non-Significant Effect
	5.1	0.186	Exact	0.5585	Non-Significant Effect
	10	0.015	Exact	0.0617	Non-Significant Effect
	21*	0.008	Exact	0.0416	Significant Effect

Data Summary

Conc-ug ai/larv	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	31	5	36	0.861	0.139	0.0%
1.3		30	6	36	0.833	0.167	-20.0%
2.6		29	7	36	0.806	0.194	-40.0%
5.1		27	9	36	0.75	0.25	-80.0%
10		22	14	36	0.611	0.389	-180.0%
21		21	15	36	0.583	0.417	-200.0%

Graphics



Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	03-7297-8084	**Endpoint:**	Day 15 Mortality	**CETIS Version:**	CETISv1.9.5
Analyzed:	21 Oct-19 21:33	**Analysis:**	STP 2xK Contingency Tables-Numerical Sc	**Status Level:**	1

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**			
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**			
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**			
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture	**Age:**	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C < T	5.1	10	7.141	

Cochran-Armitage (N) Trend Test

Control vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control	1.3	0.329	Asymp	0.3711	Non-Significant Effect
	2.6	0.633	Asymp	0.2634	Non-Significant Effect
	5.1	1.263	Asymp	0.1032	Non-Significant Effect
	10*	2.825	Asymp	0.0024	Significant Effect
	21*	3.324	Asymp	4.4E-04	Significant Effect

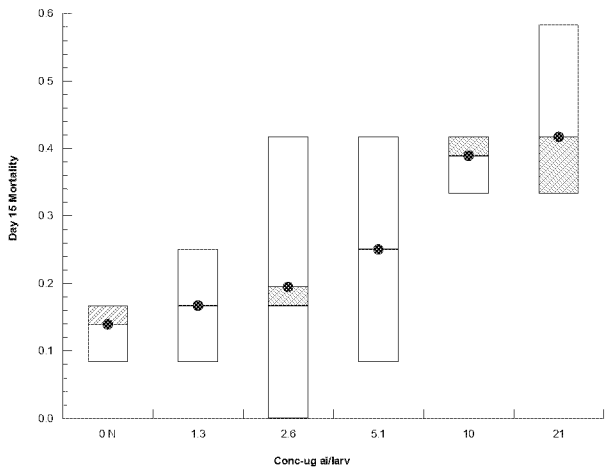
Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Overall Effect	Pearson Chi-Square Test	12.9	11.1	0.0241	Significant Overall Effect
Nonlinearity	Chi-Square Lack of Fit Test	1.87	9.49	0.7588	Non-Significant Lack of Linearity
Overdispersion	Tarone C(α) Binomial Overdispersion Test	1.59	1.64	0.0554	Non-Significant Overdispersion

Data Summary

Conc-ug ai/larv	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	31	5	36	0.861	0.139	0.0%
1.3		30	6	36	0.833	0.167	-20.0%
2.6		29	7	36	0.806	0.194	-40.0%
5.1		27	9	36	0.75	0.25	-80.0%
10		22	14	36	0.611	0.389	-180.0%
21		21	15	36	0.583	0.417	-200.0%

Graphics



Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	16-3345-0662	**Endpoint:**	Larval Mortality	**CETIS Version:**	CETISv1.9.5
Analyzed:	21 Oct-19 21:33	**Analysis:**	STP 2xK Contingency Tables	**Status Level:**	1

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**	
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**	
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**	
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture **Age:**

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C < T	21	>21	n/a	

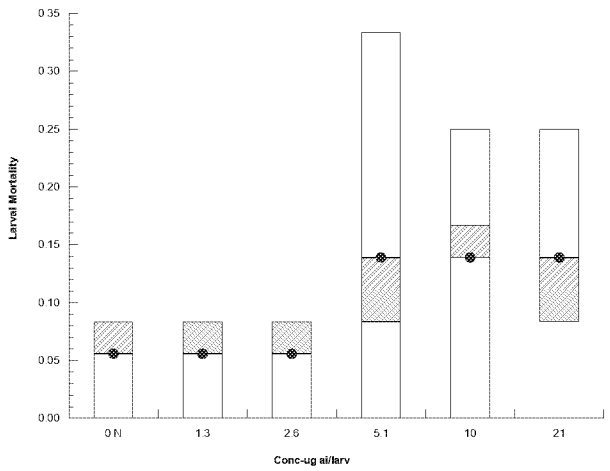
Fisher Exact/Bonferroni-Holm Test

Control vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control	1.3	0.693	Exact	1.0000	Non-Significant Effect
	2.6	0.693	Exact	1.0000	Non-Significant Effect
	5.1	0.214	Exact	1.0000	Non-Significant Effect
	10	0.214	Exact	1.0000	Non-Significant Effect
	21	0.214	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-ug ai/larv	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	34	2	36	0.944	0.0556	0.0%
1.3		34	2	36	0.944	0.0556	0.0%
2.6		34	2	36	0.944	0.0556	0.0%
5.1		31	5	36	0.861	0.139	-150.0%
10		31	5	36	0.861	0.139	-150.0%
21		31	5	36	0.861	0.139	-150.0%

Graphics



Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study — **BioChem Agrar**

Analysis ID:	02-5708-3865	**Endpoint:**	Adult Emergence Rate	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:28	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**	
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**	
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**	
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture **Age:**

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimize	Pooled	Het Corr	Weighted
Log-Normal (Probit)	η=inv Φ[π]	Zero Threshold	0	No	No	No	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	PMSD	F Stat	P-Value	Decision(α:5%)
5	-27.5	60	60.5	0.981	0.818	0.783		2.83	0.0928	Non-Significant Lack of Fit

Point Estimates

Level	ug ai/larv	95% LCL	95% UCL
EC5	0.432	0.0761	0.956
EC10	0.856	0.23	1.6
EC25	2.69	1.37	3.99
EC50	9.58	6.61	16.7

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
Intercept	-1.2	0.211	-1.61	-0.786	-5.69	7.5E-05	Significant Parameter
Slope	1.22	0.244	0.743	1.7	5	2.4E-04	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	56.5	56.5	1	51.5	7.2E-06	Significant
Lack of Fit	6.54	2.18	3	2.83	0.0928	Non-Significant
Pure Error	7.71	0.771	10			
Residual	14.3	1.1	13			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Model Fit	Likelihood Ratio GOF Test	15.4	22.4	0.2804	Non-Significant Heterogeneity
	Pearson Chi-Sq GOF Test	14.3	22.4	0.3564	Non-Significant Heterogeneity
Variance	Mod Levene Equality of Variance	1.61	5.19	0.3041	Equal Variances
Distribution	Anderson-Darling A2 Normality Te	0.416	2.49	0.3372	Normal Distribution
	Shapiro-Wilk W Normality Test	0.942	0.882	0.4143	Normal Distribution
Overdispersion	Tarone C(α) Binomial Overdispers	1.28	1.64	0.1004	Non-Significant Overdispersion

Adult Emergence Rate Summary

			Calculated Variate(A/B)								
Conc-ug ai/larv	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
1.3		3	0.778	0.750	0.833	0.028	0.048	6.19%	0.0%	28	36
2.6		3	0.778	0.583	0.917	0.100	0.173	22.30%	0.0%	28	36
5.1		3	0.722	0.583	0.917	0.100	0.173	24.00%	7.14%	26	36
10		3	0.583	0.583	0.583	0.000	0.000	0.00%	25.0%	21	36
21		3	0.222	0.167	0.250	0.028	0.048	21.70%	71.4%	8	36

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	02-5708-3865	**Endpoint:**	Adult Emergence Rate	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:28	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

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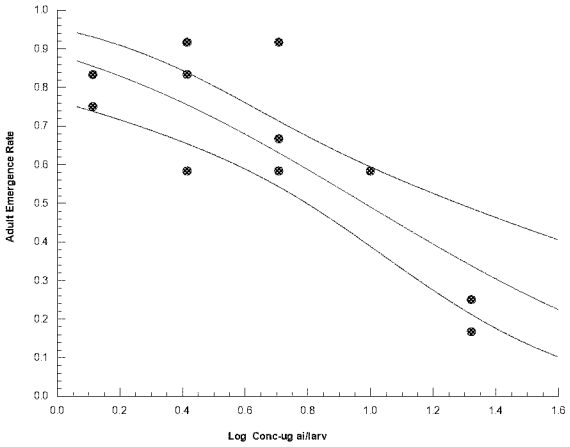

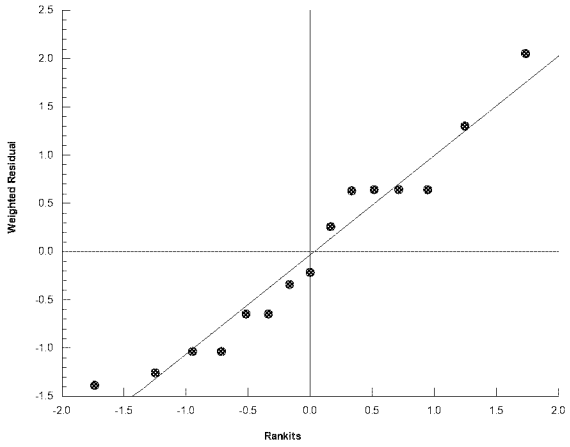

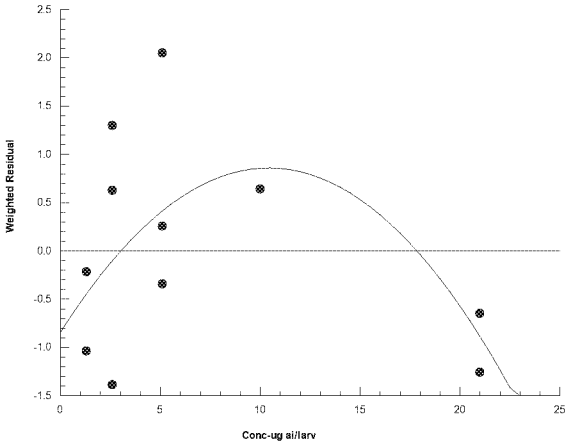

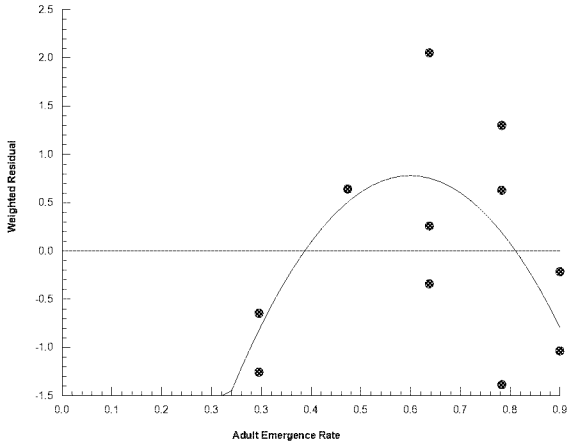

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	09-0915-1188	**Endpoint:**	Day 15 Mortality	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:28	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**	
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**	
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**	
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture **Age:**

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimize	Pooled	Het Corr	Weighted
Log-Normal (Probit)	η=inv Φ[π]	Zero Threshold	0	No	No	No	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	PMSD	F Stat	P-Value	Decision(α:5%)
4	-26.8	58.7	59.1	1.57	1.43	0.672		0.132	0.9390	Non-Significant Lack of Fit

Point Estimates

Level	ug ai/larv	95% LCL	95% UCL
LC5	0.165	8.82E-05	0.759
LC10	0.545	0.00338	1.61
LC25	4.01	1.07	7.94
LC50	36.8	14.9	2030

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
Intercept	-1.1	0.211	-1.51	-0.683	-5.2	1.7E-04	Significant Parameter
Slope	0.701	0.242	0.227	1.17	2.9	0.0125	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	31.4	31.4	1	29.6	1.1E-04	Significant
Lack of Fit	0.526	0.175	3	0.132	0.9388	Non-Significant
Pure Error	13.3	1.33	10			
Residual	13.8	1.06	13			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Model Fit	Likelihood Ratio GOF Test	16.2	22.4	0.2377	Non-Significant Heterogeneity
	Pearson Chi-Sq GOF Test	13.8	22.4	0.3883	Non-Significant Heterogeneity
Variance	Bartlett Equality of Variance Test	3.78	9.49	0.4360	Equal Variances
	Mod Levene Equality of Variance	1.56	5.19	0.3156	Equal Variances
Distribution	Anderson-Darling A2 Normality Te	0.209	2.49	0.9033	Normal Distribution
	Shapiro-Wilk W Normality Test	0.977	0.882	0.9467	Normal Distribution
Overdispersion	Tarone C(α) Binomial Overdispers	1.59	1.64	0.0554	Non-Significant Overdispersion

Day 15 Mortality Summary

			Calculated Variate(A/B)								
Conc-ug ai/larv	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
1.3		3	0.167	0.083	0.250	0.048	0.083	50.00%	0.0%	6	36
2.6		3	0.194	0.000	0.417	0.121	0.210	108.00%	3.33%	7	36
5.1		3	0.250	0.083	0.417	0.096	0.167	66.70%	10.0%	9	36
10		3	0.389	0.333	0.417	0.028	0.048	12.40%	26.7%	14	36
21		3	0.417	0.333	0.583	0.083	0.144	34.60%	30.0%	15	36

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	09-0915-1188	**Endpoint:**	Day 15 Mortality	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:28	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

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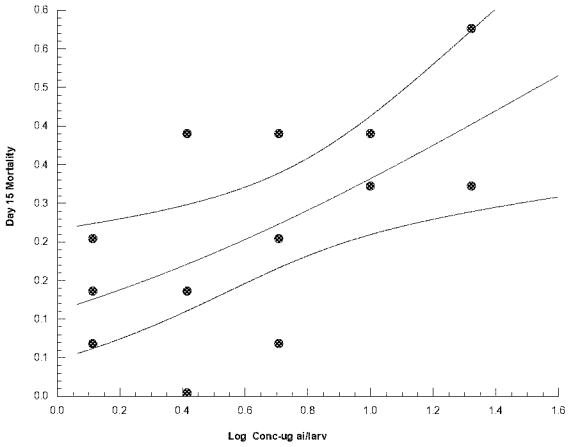
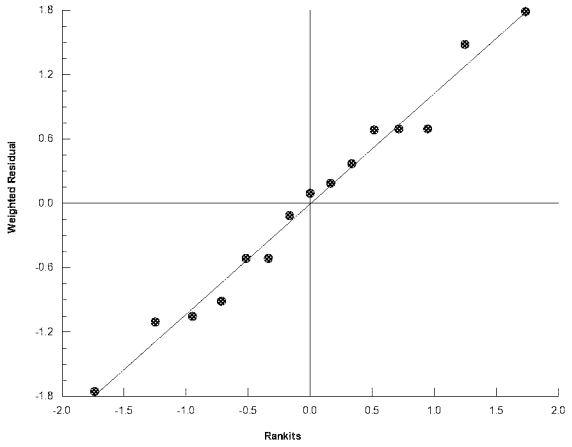
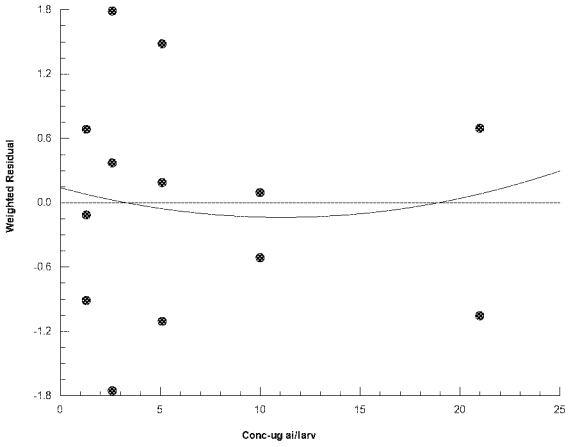
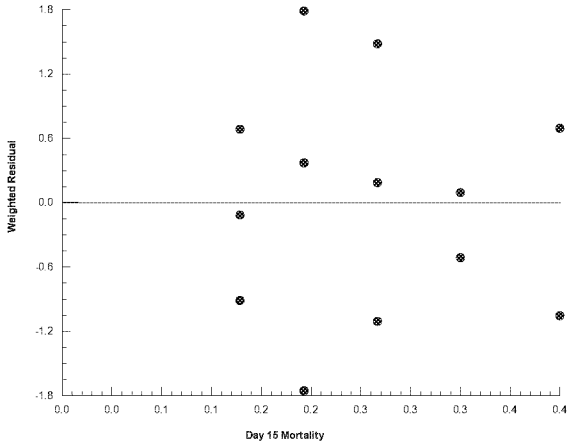








CETIS Analytical Report

Report Date:	21 Oct-19 21:35 (p 1 of 1)
Test Code/ID:	50784602 dd / 21-4348-9808

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study — **BioChem Agrar**

Analysis ID:	13-4812-8022	**Endpoint:**	Adult Emergence Rate	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:28	**Analysis:**	Trimmed Spearman-Kärber	**Status Level:**	1

Batch ID:	06-6081-2054	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**	
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**	
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**	
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture **Age:**

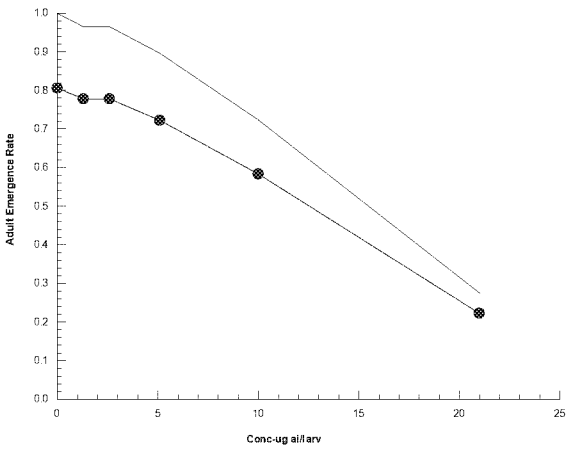
Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.194	27.59%	1.16	0.0379	14.5	12.2	17.3

Adult Emergence Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-ug ai/larv	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Dev**	**CV%**	**%Effect**	**A/B**	**Mean**	**%Effect**
0	N	3	0.806	0.750	0.833	0.048	5.97%	0.0%	29/36	0.806	0.0%
1.3		3	0.778	0.750	0.833	0.048	6.19%	3.45%	28/36	0.778	3.45%
2.6		3	0.778	0.583	0.917	0.173	22.30%	3.45%	28/36	0.778	3.45%
5.1		3	0.722	0.583	0.917	0.173	24.00%	10.3%	26/36	0.722	10.3%
10		3	0.583	0.583	0.583	0.000	0.00%	27.6%	21/36	0.583	27.6%
21		3	0.222	0.167	0.250	0.048	21.70%	72.4%	8/36	0.222	72.4%

Graphics



Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	11-0645-2795	**Endpoint:**	Adult Emergence Rate	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:35	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

Batch ID:	17-6444-2655	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**	
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**	
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**	
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture **Age:**

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimize	Pooled	Het Corr	Weighted
Log-Normal (Probit)	η=inv Φ[π]	Zero Threshold	0	No	No	No	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	PMSD	F Stat	P-Value	Decision(α:5%)
5	-27.4	59.8	60.2	2.39	0.806	0.785		2.71	0.1020	Non-Significant Lack of Fit

Point Estimates

Level	mg ai/kg	95% LCL	95% UCL
EC5	11.6	2.14	25.4
EC10	22.8	6.33	42.1
EC25	70.5	36.5	104
EC50	247	171	426

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
Intercept	-2.97	0.545	-4.04	-1.9	-5.44	1.1E-04	Significant Parameter
Slope	1.24	0.247	0.757	1.72	5.03	2.3E-04	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	56.2	56.2	1	52	6.8E-06	Significant
Lack of Fit	6.3	2.1	3	2.71	0.1016	Non-Significant
Pure Error	7.76	0.776	10			
Residual	14.1	1.08	13			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Model Fit	Likelihood Ratio GOF Test	15.2	22.4	0.2945	Non-Significant Heterogeneity
	Pearson Chi-Sq GOF Test	14.1	22.4	0.3700	Non-Significant Heterogeneity
Variance	Mod Levene Equality of Variance	1.62	5.19	0.3023	Equal Variances
Distribution	Anderson-Darling A2 Normality Te	0.379	2.49	0.4095	Normal Distribution
	Shapiro-Wilk W Normality Test	0.949	0.882	0.5085	Normal Distribution
Overdispersion	Tarone C(α) Binomial Overdispersi	1.28	1.64	0.1004	Non-Significant Overdispersion

Adult Emergence Rate Summary

			Calculated Variate(A/B)								
Conc-mg ai/kg	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
35.07		3	0.778	0.750	0.833	0.028	0.048	6.19%	0.0%	28	36
66.9		3	0.778	0.583	0.917	0.100	0.173	22.30%	0.0%	28	36
129.7		3	0.722	0.583	0.917	0.100	0.173	24.00%	7.14%	26	36
260.9		3	0.583	0.583	0.583	0.000	0.000	0.00%	25.0%	21	36
540		3	0.222	0.167	0.250	0.028	0.048	21.70%	71.4%	8	36

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	11-0645-2795	**Endpoint:**	Adult Emergence Rate	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:35	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

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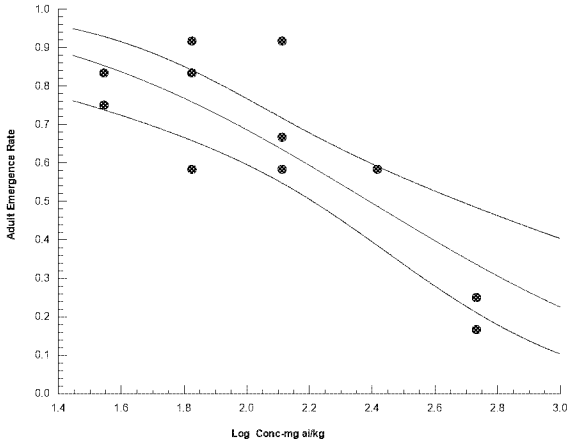

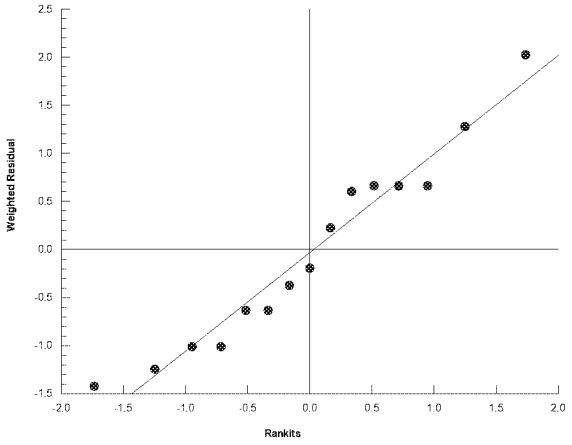

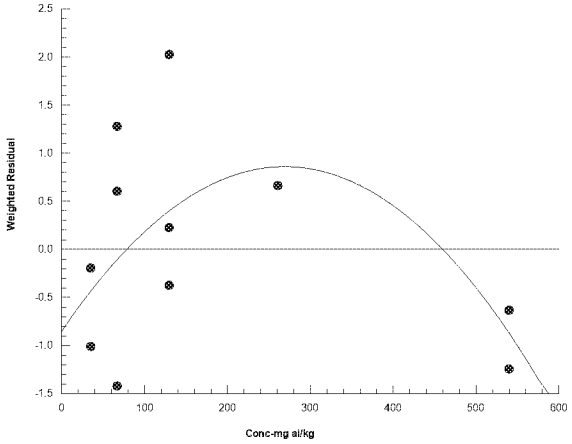

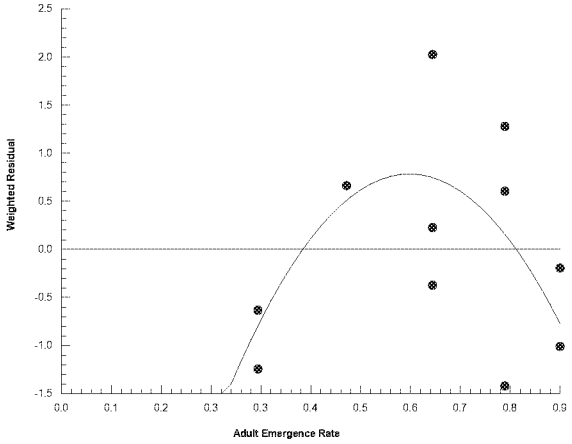

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	06-3835-8515	**Endpoint:**	Day 15 Mortality	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:35	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

Batch ID:	17-6444-2655	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**		
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**		
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**		
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture	**Age:**

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimize	Pooled	Het Corr	Weighted
Log-Normal (Probit)	η=inv Φ[π]	Zero Threshold	0	No	No	No	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	PMSD	F Stat	P-Value	Decision(α:5%)
4	-26.8	58.6	59.1	2.97	1.41	0.671		0.118	0.9470	Non-Significant Lack of Fit

Point Estimates

Level	mg ai/kg	95% LCL	95% UCL
LC5	4.49	0.0029	20.2
LC10	14.6	0.103	42.5
LC25	105	28.8	205
LC50	931	381	46600

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
Intercept	-2.11	0.541	-3.17	-1.05	-3.89	0.0018	Significant Parameter
Slope	0.71	0.244	0.232	1.19	2.91	0.0122	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	31.3	31.3	1	29.5	1.1E-04	Significant
Lack of Fit	0.473	0.158	3	0.118	0.9473	Non-Significant
Pure Error	13.3	1.33	10			
Residual	13.8	1.06	13			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Model Fit	Likelihood Ratio GOF Test	16.2	22.4	0.2405	Non-Significant Heterogeneity
	Pearson Chi-Sq GOF Test	13.8	22.4	0.3889	Non-Significant Heterogeneity
Variance	Bartlett Equality of Variance Test	3.81	9.49	0.4324	Equal Variances
	Mod Levene Equality of Variance	1.57	5.19	0.3123	Equal Variances
Distribution	Anderson-Darling A2 Normality Te	0.199	2.49	0.9297	Normal Distribution
	Shapiro-Wilk W Normality Test	0.979	0.882	0.9618	Normal Distribution
Overdispersion	Tarone C(α) Binomial Overdispersi	1.59	1.64	0.0554	Non-Significant Overdispersion

Day 15 Mortality Summary

			Calculated Variate(A/B)								
Conc-mg ai/kg	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
35.07		3	0.167	0.083	0.250	0.048	0.083	50.00%	0.0%	6	36
66.9		3	0.194	0.000	0.417	0.121	0.210	108.00%	3.33%	7	36
129.7		3	0.250	0.083	0.417	0.096	0.167	66.70%	10.0%	9	36
260.9		3	0.389	0.333	0.417	0.028	0.048	12.40%	26.7%	14	36
540		3	0.417	0.333	0.583	0.083	0.144	34.60%	30.0%	15	36

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study **BioChem Agrar**

Analysis ID:	06-3835-8515	**Endpoint:**	Day 15 Mortality	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:35	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

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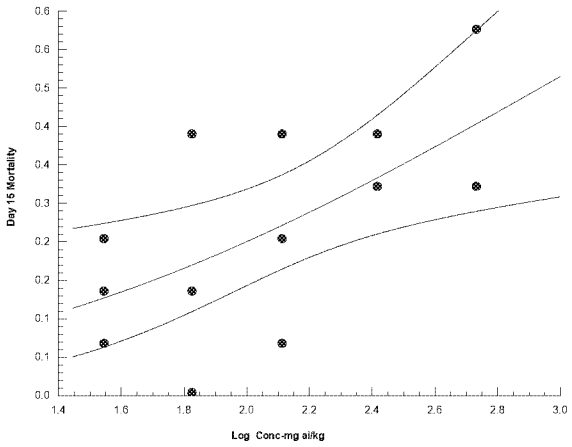
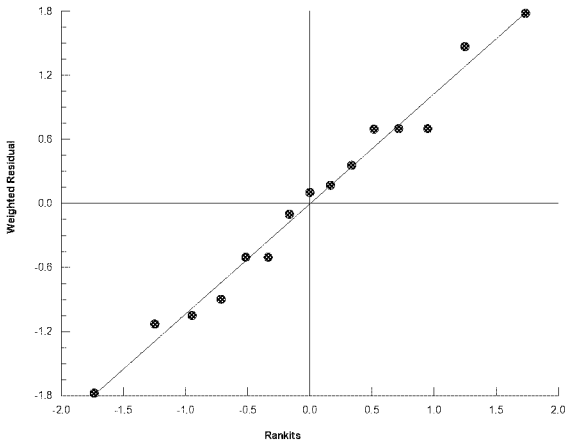
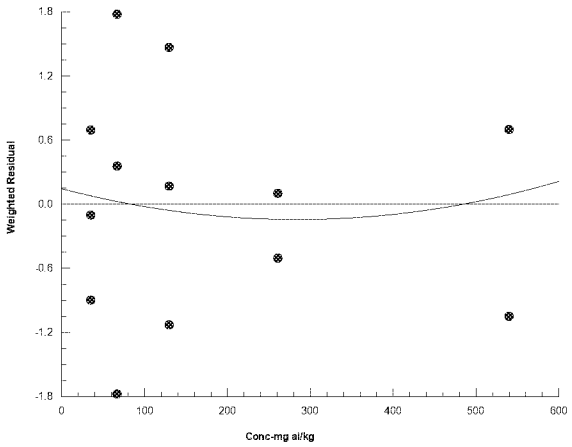
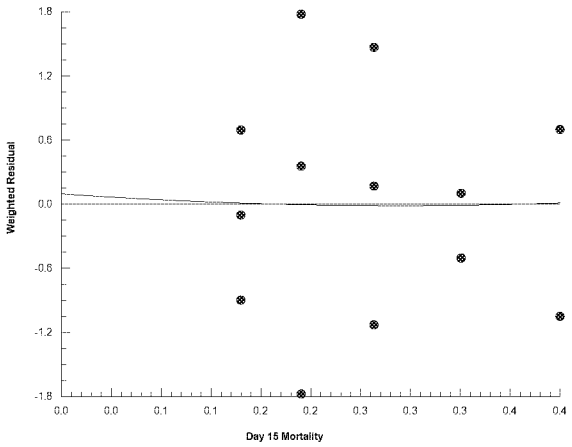








CETIS Analytical Report

Report Date:	17 Jun-19 17:35 (p 1 of 1)
Test Code/ID:	50784602 dc / 07-1334-2791

Special Study Honey bee Larval Chronic Oral Toxicity, 21-day Study — **BioChem Agrar**

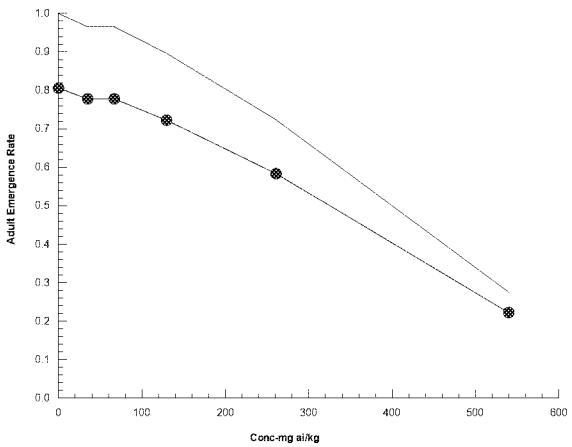
Analysis ID:	06-7537-8782	**Endpoint:**	Adult Emergence Rate	**CETIS Version:**	CETISv1.9.5
Analyzed:	17 Jun-19 17:35	**Analysis:**	Trimmed Spearman-Kärber	**Status Level:**	1

Batch ID:	17-6444-2655	**Test Type:**	OECD 2014 HB Larval Repeat Exp	**Analyst:**	
Start Date:	13 Aug-18	**Protocol:**	Larval Chronic Oral Toxicity, 21-day Study	**Diluent:**	
Ending Date:	03 Sep-18	**Species:**	Apis mellifera	**Brine:**	
Test Length:	21d 0h	**Taxon:**		**Source:**	Lab In-House Culture **Age:**

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0.194	27.59%	2.57	0.0371	375	316	445

Adult Emergence Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-mg ai/kg	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Dev**	**CV%**	**%Effect**	**A/B**	**Mean**	**%Effect**
0	N	3	0.806	0.750	0.833	0.048	5.97%	0.0%	29/36	0.806	0.0%
35.07		3	0.778	0.750	0.833	0.048	6.19%	3.45%	28/36	0.778	3.45%
66.9		3	0.778	0.583	0.917	0.173	22.30%	3.45%	28/36	0.778	3.45%
129.7		3	0.722	0.583	0.917	0.173	24.00%	10.3%	26/36	0.722	10.3%
260.9		3	0.583	0.583	0.583	0.000	0.00%	27.6%	21/36	0.583	27.6%
540		3	0.222	0.167	0.250	0.048	21.70%	72.4%	8/36	0.222	72.4%

Graphics