CHAPTER 5

EXPERIMENT RESULTS

5.1   Research Result Data

In this research, three concentrations of red pepper were used in the experiment; 10%, 15%, 20% together with Malathion 0.28% as the positive control and aquades (water) as the negative control. 15 fire ants were placed in each container and different concentrations of extract, positive control and negative control are sprayed into the containers. The experiments were repeated four times. Each experiment was observed for every 1st hour, 2nd hour, 3rd hour, 4th hour, 5th hour, 6th hour and 24th hour. The results of the number of fire ants, *Solenopsis* species died from the first to the fourth repetition can be seen from Table 5.1.

Table 5.1 Number of fire ants which died after treatment

After/ Time (Hour)	Negative Control (water)	Positive Control (Malathione)	10% of red pepper extract				15% of red pepper extract				20% of red pepper extract			
			E1	E2	E3	E4	E1	E2	E3	E4	E1	E2	E3	E4
1	0	15	3	4	0	3	4	5	4	1	9	8	6	4
2	0	15	4	7	3	4	5	9	5	3	12	13	10	5
3	0	15	7	9	4	4	8	11	6	7	12	14	13	6
4	0	15	10	10	5	7	9	12	6	9	13	14	13	10
5	0	15	13	10	8	10	10	13	7	10	14	14	13	10
6	0	15	13	12	10	10	11	15	8	11	14	15	14	11
24	0	15	15	15	15	15	15	15	15	14	15	15	15	15

Explanation:

E1 = First repetition of the experiment

E2 = Second repetition of the experiment

E3 = Third repetition of the experiment

E4 = Fourth repetition of the experiment

5.2 Insecticidal Potency of Red Pepper towards Fire Ants

5.2.1 Descriptive Statistics

Table 5.2 Insecticidal Potency of Red Pepper towards Fire Ants

concentrations	hours	Mean	Std. Deviation	N
negative control	1	.0000	.00000	4
	2	.0000	.00000	4
	3	.0000	.00000	4
	4	.0000	.00000	4
	5	.0000	.00000	4
	6	.0000	.00000	4
	24	3.3350	3.85093	4
	Total	.4764	1.74931	28

10%	1	16.6675	11.54797	4
	2	30.0025	11.54797	4
	3	40.0025	16.32857	4
	4	53.3350	16.33265	4
	5	68.3350	13.74611	4
	6	75.0025	9.99944	4
	24	1.0000E2	.00000	4
	Total	54.7636	29.16431	28
15%	1	23.3350	11.54508	4
	2	36.6650	16.77785	4
	3	53.3325	14.39959	4
	4	61.6675	16.66700	4
	5	65.0025	16.66700	4
	6	74.9975	19.14999	4
	24	98.3325	3.33500	4
	Total	59.0475	26.71032	28
20%	1	45.0000	14.78037	4
	2	66.6675	23.72934	4
	3	75.0000	23.95953	4
	4	83.3350	11.54508	4
	5	85.0000	12.61686	4
	6	89.9975	11.54797	4
	24	1.0000E2	.00000	4
	Total	77.8571	22.00255	28

positive control	1	1.0000E2	.00000	4
	2	1.0000E2	.00000	4
	3	1.0000E2	.00000	4
	4	1.0000E2	.00000	4
	5	1.0000E2	.00000	4
	6	1.0000E2	.00000	4
	24	1.0000E2	.00000	4
	Total	1.0000E2	.00000	28
Total	1	37.0005	36.60880	20
	2	46.6670	37.08719	20
	3	53.6670	36.86346	20
	4	59.6675	36.41731	20
	5	63.6675	36.48126	20
	6	67.9995	37.50071	20
	24	80.3335	39.55678	20
	Total	58.4289	38.75428	140
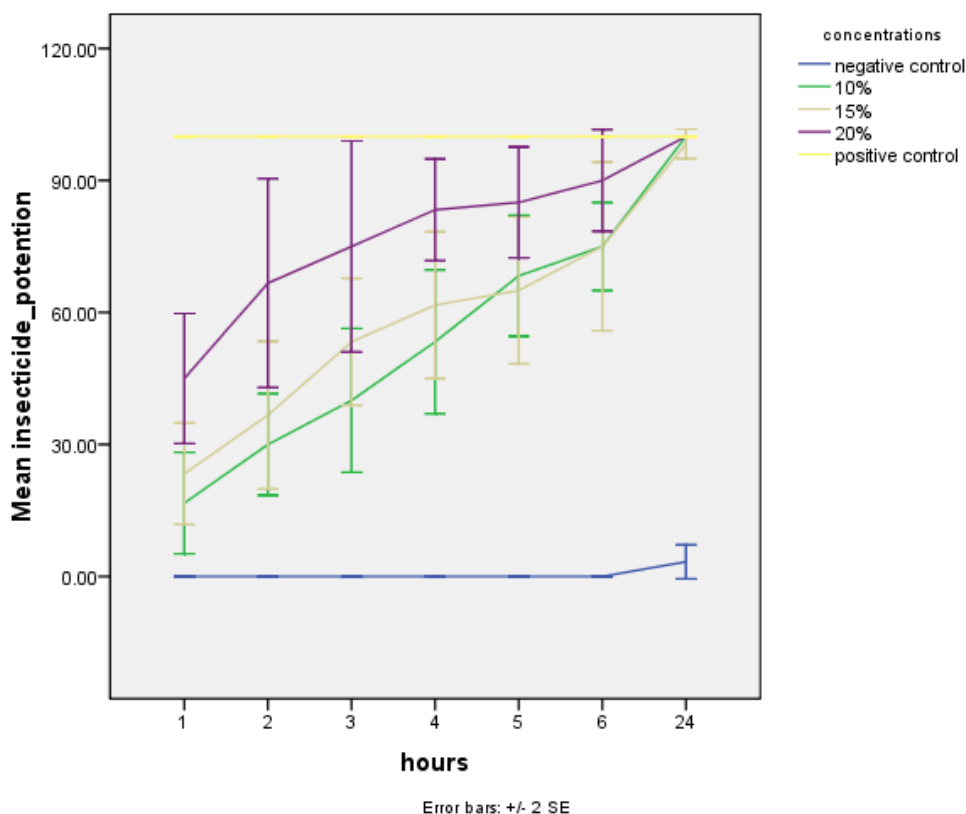
Figure 5.1. Line Chart of Insecticide Potency in Every Treatments per Hour

Fig 5.1 above described overall insecticide potency of Red Pepper towards fire ants in every cooncentrations per hour.

5.3   Data Analysis

Insecticidal potency data was analyzed statistically by SPSS version 17.0. To determine appropriate test for statistical analysis, several tests should be performed. Due to the dependent variable (insecticidal potency) was a numeric type and 2 independent variables (time and concentrations), the appropriate statistical test for this research was Anova Test. Before performing *One Way ANOVA (Anayisis of Variance)* test*,* the data of insecticidal potency should be tested for homogeneity and normality distribution with *homogenity of variance*

test (*levene test*) to determine whether data have homogeny variance and *Kolmogorov Smirnov test* to determine whether data have normal distribution. Anova test could only be performed if the data showed normal distribution and had homogeny variance.

5.3.1 Homogeneity of variance test (Levene test)

Levene test shows homogeny variance if the p value is more than 0.05. In this research, p value for Levene test was 0.073 (p>0.05) which meant that the data about insecticidal potency had homogeny variance.

5.3.2 Kolgorov Smirnov Normality Test

Kolmogorov Smirnov test shows normal distribution if the p value of the test is more than 0.05. The p value for normality test of insecticidal potency in this research was 0.091 (p>0.05) so it showed normal distribution.

5.3.3 One way Anova test for insecticidal potency

Anova test can be performed as the data of insecticide potency was eligible and the data showed normal distribution and had homogenous variance. Therefore, One way anova test for each hour had been performed to analyzed the insecticidal potential effect of the extract. The extract would give significant effect on insecticidal potency if the p value was <0.05. Based on One way anova test performed, it showed that Red Pepper extract gave significant effect on insecticide potency in every hour (all p value = 0.000; p<0.05).

5.3.4 Post Hoc Tukey Test

Post Hoc Tukey test was a multiple comparison test which was done to know the differences in insecticidal potency between groups. If p value of the test

is less than 0.05, it can be said that there is significant differences between the groups.

There was significant difference of insecticide potency in all doses compared with negative control. There was no significant difference of insecticide potency in concentration 10% compared to 15% (p = 0,614), meanwhile there was no concentration group that have the same effect as positive control (p<0,05). The result of Post Hoc Tukey test for time variable was different. The conclusion of Post Hoc Tukey test for time variables was there was no significant difference of insecticide potency between 3rd, 4th, and 5^{Th} hour (p>0,05) and also between 1st and 2nd hour (p=0.105). However, there was significant difference between 2nd hour and 4th hour (p= 0.007)

5.3.5 Pearson Correlation Test

Pearson correlation test is a statistical test performed to determine the correlation between dependent variable (insecticide potency) and independent variables (time and concentration). Significant correlation was achieved if p value was less than 0.05. The result of Pearson correlation test showed p value = 0.000 for concentration against insecticide potency and p = 0.000 for time against insecticide potency. It meant that insecticide potency had significant correlation with concentrations and time of incubation.

The correlation coefficient (r value) for concentration was 0.783 so this value showed that the strength of correlation between concentration and insecticide potency was strong. While correlation coefficient (r value) for time was 0.371 which meant that the strength of correlation between time and insecticide potency was weak (r < 0.500 weak correlation; r = 0.500-0.699 moderate correlation; r = 0.700-0.799 strong correlation; r>0.799 very strong correlation)