Section III: Results

The results of this experiment are of the Negative Geotaxis Assay of all five groups (two control and three experimental). These results are shown in the graphs to the bottom left (on the next page). Each group has a different number of total flies: LDOPA - 91, Bifidobacterium – 84, Inulin – 80, Inulin and Bifidobacterium – 120, and Wild Type – 23. Firstly, each dataset is put through a linear regression to obtain a slope, which is then normalized by dividing by the total amount of flies in each container. Thereafter, to make the data much easier to comprehend, the slopes are multiplied by 100. Lastly, a difference of slopes test is used to compare each experimental group slope with the control group slope and levodopa only group slope.

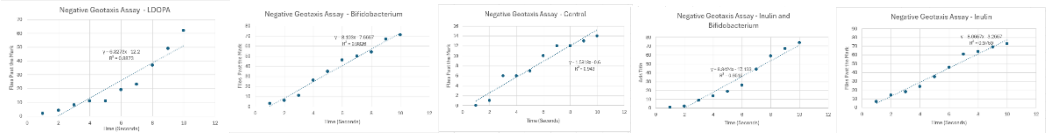

Figure 1. The graphs above show the results of the negative geotaxis assay for each group, both experimental and control. On the vertical axis is the number of flies that are past the 8cm mark and on the horizontal axis is the time in minutes. The graph shows a trendline, which is produced through a linear regression. The equation of the line is also shown, including the slope, which will be used to determine depression levels.

Depression levels

All of the assays in this experiment measure depression levels in the drosophila. The results for the negative geotaxis assay are shown in the graphs above.

Test One

First, a linear regression was performed on each set of data, of which the slope obtained is shown in the tables below. Thereafter a difference of slopes test was performed on each experimental

group vs the control group and levodopa group to measure if there is any significant difference in depression levels due to the treatments.

Calculation:	ldopa	inulin		Ldopa	inulin
1	2	7	Slope=	5.416666667	8.433333333
2	4	14	n=	10	10
3	8	18	SE(reg)=	7.241923401	4.070217029
4	11	24	SE(slope)=	0.797309525	0.448116147
5	11	35	Dfifference=	3.016666667	
6	19	46	SE(difference)=	0.914609512	
7	23	61	t-stat=	3.298311056	
8	37	64	df=	16	
9	49	69	p=	0.004535411	
10	62	73			

Calculation:	Inulin	bifido		Inulin	Bifido
1	7	3	Slope=	8.433333333	8.3
2	14	6	n=	10	10
3	18	11	SE(reg)=	4.070217029	3.464538974
4	24	26	SE(slope)=	0.448116147	0.381433187
5	35	35	Dfifference=	-0.13333333	
6	46	46	SE(difference)=	0.588472053	
7	61	50	t-stat=	0.226575472	
8	64	54	df=	16	
9	69	67	p=	0.823623187	
10	73	71			

Calculation:	inulinbifido	Bifido		inulinbifido	Bifido
1	1	3	Slope=	8.616666667	8.433333333
2	2	6	n=	10	10
3	9	11	SE(reg)=	6.402650966	3.464538974
4	14	26	SE(slope)=	0.704908671	0.381433187
5	19	35	Dfifference=	-0.18333333	
6	26	46	SE(difference)=	0.801490806	
7	44	50	t-stat=	0.228740407	
8	59	54	df=	16	
9	67	67	p=	0.821968694	
10	74	71			

Calculation:	Control	Bifido		Control	Bifido
1	0	3	Slope=	5.416666667	8.3
2	1	6	n=	10	10
3	6	11	SE(reg)=	1.248635619	3.464538974
4	6	26	SE(slope)=	0.137470257	0.381433187
5	7	35	Dfifference=	2.883333333	
6	10	46	SE(difference)=	0.405449563	
7	12	50	t-stat=	7.111447631	
8	12	54	df=	16	
9	13	67	p=	2.46617E-06	
10	14	71			

Calculation:	Control	inulin		Control	inulin
1	0	7	Slope=	5.416666667	8.433333333
2	1	14	n=	10	10
3	6	18	SE(reg)=	1.248635619	4.070217029
4	6	24	SE(slope)=	0.137470257	0.448116147
5	7	35	Dfifference=	3.016666667	
6	10	46	SE(difference)=	0.468728229	
7	12	61	t-stat=	6.435854471	
8	12	64	df=	16	
9	13	69	p=	8.23289E-06	
10	14	73			

Calculation:	Control	inulinbifido		Control	inulinbfido
1	0	1	Slope=	5.416666667	8.616666667
2	1	2	n=	10	10
3	6	9	SE(reg)=	1.248635619	6.402650966
4	6	14	SE(slope)=	0.137470257	0.704908671
5	7	19	Dfifference=	3.2	
6	10	26	SE(difference)=	0.718188211	
7	12	44	t-stat=	4.45565654	
8	12	59	df=	16	
9	13	67	p=	0.000398485	
10	14	74			

Calculation:	ldopa	inulinbifido		Ldopa	inulinbfido
1	2	1	Slope=	5.416666667	8.616666667
2	4	2	n=	10	10
3	8	9	SE(reg)=	7.241923401	6.402650966
4	11	14	SE(slope)=	0.797309525	0.704908671
5	11	19	Dfifference=	3.2	
6	19	26	SE(difference)=	1.064236212	
7	23	44	t-stat=	3.006851265	
8	37	59	df=	16	
9	49	67	p=	0.008359155	
10	62	74			

Calculation:	ldopa	bifido		Ldopa	Bifido
1	2	3	Slope=	5.416666667	8.3
2	4	6	n=	10	10
3	8	11	SE(reg)=	7.241923401	3.464538974
4	11	26	SE(slope)=	0.797309525	0.381433187
5	11	35	Dfifference=	2.883333333	
6	19	46	SE(difference)=	0.883851659	
7	23	50	t-stat=	3.262236715	
8	37	54	df=	16	
9	49	67	p=	0.004893356	
10	62	71			

Figure 2. These tables show the difference in slopes test done to each linear regression. The p-values for each are the end result of the testing and determine whether there is a significant difference between the two slopes. The p-values are shown above in each table, corresponding to two specific slopes