


“The leaves of the tree were for the healing of the nations.”  
 (Revelation 22:2)

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## Statistical Summary of Effects of Eleotin

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### Summary

An analysis done in 1999 shows that

- 1) A typical user was a 53.6 years old patient who had been diabetic for 9.8 years and whose initial BGL was 297.3 mg/dl. He used Eleotin for 3.9 months and his BGL dropped to 167.1 mg/dl.
- 2) A null hypothesis (H1: There is no difference in BGL reduction between the user group and control group) is rejected in favor of an alternative hypothesis (H2: the reduction of BGL in the user group is higher than that of control group) at a confidence level higher than 99%. We also found out that as long as the control group is given a therapy which reduces BGL by less than 70 mg/dl, the null hypotheses will be rejected at a confidence level of 95%.
- 3) A null hypothesis (H1: the length of Eleotin usage does not affect the size of the reduction of BGL) is rejected in favor of an alternative hypothesis (H2: the length of Eleotin usage increases the size of the reduction of BGL) at a confidence level higher than 99%.
- 4) Eleotin is not only effective in reducing the levels of BGL, but also very effective in reducing the fluctuation of BGL. It also prevents hypoglycemia.
- 5) Most of the statistical explanation in the user group is attributable to those who used Eleotin for more than 3 months.
- 6) The younger person experienced more drops in BGL in response to Eleotin. But, the ages of patients were not a dominant determinant of the Eleotin's effects. The years of diabetes is not really an important factor, either. The sexes of the patients were not an important factor, either. In other words, we can say that if one uses Eleotin for more than 3-4 months, people are quite likely to experience significant reductions in BGL regardless of their ages, sexes, and the years of diabetes, even though younger, male and newer patients did slightly better.

### Statistical Analysis of Eleotin's Effects

1999/11/25

#### 1. Introduction

in what follows, we investigate the following questions:

Question 1: Is Eleotin effective in reducing the blood glucose levels (BGL) of diabetic patients?



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University of Calgary  
 (UTI) officials



Press conference at the  
 launching of the first Eleotin

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Question 2: Is Eleotin effective when used less than three months?

Question 3: Is the age of a patient an important factor in the determination of effectiveness?

Question 4: Is the years of diabetes an important factor in the determination of effectiveness?

Question 5: Is there a tendency that the higher the initial BGL is, the more evident the effects are?

In order to investigate the above questions we use the data of

1) User Group: 80 patients who used Eleotin during the period of 1998 and 1999 and whose BGL's before and after the usage were monitored by physicians and/or labs and whose years of diabetes and ages were reported, and

2) Control Group: 20 patients whose BGL before the usage and after were monitored by physicians and/or labs and whose years of diabetes and ages were reported during the same period

## 2. The results

In Table 1-A, we report the BGL changes of the user group

**Table 1-A) BGL changes of User Group**

User ID	mon	yd	age	BGLb	BGLa	Change%	Changeb
1	7	1.0	63	214	141	34.1%	73
2	3	10.0	65	200	166	17.0%	34
3	3	26.0	60	290	110	62.1%	180
4	1	7.0	65	234	180	23.1%	54
5	2	4.0	53	230	149	35.2%	81
6	10	2.0	50	230	117	49.1%	113
7	8	10.0	45	320	178	44.4%	142
8	5	7.0	58	198	126	36.4%	72
9	12	10.0	50	250	280	-12.0%	-30
10	3	15.0	61	160	200	-25.0%	-40
11	1	7.0	47	198	171	13.6%	27
12	11	1.0	57	180	110	38.9%	70
13	1	7.0	55	260	220	15.4%	40
14	10	4.0	75	142	148	-4.2%	-6
15	3	1.0	60	163	158	3.1%	5
16	8	25.0	43	250	196	21.6%	54
17	1.5	8.0	40	270	148	45.2%	122
18	1.5	7.0	55	270	120	55.6%	150
19	1.5	7.0	55	330	270	18.2%	60
20	2	10.0	53	180	180	0.0%	0
21	0.5	7.0	55	300	255	15.0%	45
22	1	7.0	55	119	115	3.4%	4
23	1.5	7.0	70	300	105	65.0%	195
24	1.5	7.0	55	134	123	8.2%	11
25	12	17.0	50	306	172	43.8%	134
26	1	0.3	37	330	225	31.8%	105
27	3	12.0	60	200	135	32.5%	65
28	4	15.0	65	230	220	4.3%	10
29	2	5.0	48	400	380	5.0%	20
30	1	10.0	68	384	367	4.4%	17
31	4	25.0	63	380	175	53.9%	205
32	1	7.0	62	280	300	-7.1%	-20
33	5	7.0	55	152	130	14.6%	22
34	5	10.0	67	333	140	58.0%	193
35	3	7.0	60	342	161	52.9%	181
36	6	13.0	73	178	94	47.2%	84
37	3	10.0	55	429	173	59.7%	256
38	3	10.0	44	400	150	62.5%	250
39	3	5.0	55	320	128	60.0%	192
40	3	12.0	52	406	162	60.1%	244
41	3	11.0	55	380	132	65.3%	248
42	3	13.0	55	417	132	68.3%	285
43	3	14.0	55	425	187	56.0%	238
44	3	7.0	55	398	180	54.8%	218
45	3	9.0	55	425	168	60.5%	257
46	3	15.0	55	469	210	55.2%	259
47	3	12.0	55	396	178	55.1%	218
48	3	7.0	56	178	117	34.4%	61
49	3	13.0	60	222	148	33.3%	74
50	1.5	0.2	43	180	120	33.3%	60
51	1	6.0	45	300	150	50.0%	150
52	7	9.0	42	350	150	57.1%	200
53	3	20.0	42	100	80	20.0%	20
54	3	43.0	53	210	143	31.9%	67
55	2.5	33.0	43	287	161	43.9%	126
56	4	10.0	25	120	89	25.8%	31
57	4	29.0	51	120	110	8.3%	10
58	5	0.5	5	350	130	62.9%	220
59	4	0.5	5	320	100	68.8%	220

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User ID	mon	yd	age	BGLb	BGLa	Change	Control
60	3	2.0	53	370	167	55.0%	204
61	2	11.0	68	259	116	55.4%	143
62	1	18.0	71	141	148	-5.3%	-7
63	2	18.0	71	139	148	-6.7%	-9
64	3	0.3	35	359	83	76.9%	276
65	3	0.3	50	250	248	0.8%	2
66	3	12.0	54	367	297	19.1%	70
67	6	0.3	21	610	145	76.2%	465
68	5	0.5	37	160	117	26.9%	43
69	3	0.3	58	328	323	1.5%	5
70	5	0.3	36	700	161	77.0%	539
71	4	5.0	78	320	128	60.0%	192
72	3	11.0	60	380	132	65.3%	248
73	6	7.0	60	398	180	54.8%	218
74	6	10.0	60	429	173	59.7%	256
75	6	15.0	60	469	210	55.2%	259
76	6	9.0	60	425	168	60.5%	257
77	7	12.0	60	406	162	60.1%	244
78	8	13.0	60	416	132	68.3%	284
79	4	14.0	60	425	187	56.0%	238
80	4	12.0	60	396	178	55.1%	218

1. mon= Months of Eleotin Usage
2. yd= Years of Diabetes
3. age=Age of users
4. BGLb= BGL before Eleotin in mg/dl
5. BGLa=BGL after Eleotin in mg/dl
6. Changeb=BGLa-BGLb: Reduction of BGL in mg/dlA typical user was a 53.6 years old patient who had been diabetic for 9.8 years and whose initial BGL was 297.3 mg/dl. He used Eleotin for 3.9 months and his BGL dropped to 167.1 mg/dl. They all maintained their pre-Eleotin therapies and they added Eleotin to their pre-Eleotin therapies. In Table 1-B, we report the changes of the BGL in the control group during the same period

**Table 1-B) BGL changes of Control Group during the same period**

User ID	yd	age	BGLb	BGLa	Change
1	2.0	66	214	236	-22
2	9.0	56	200	201	-1
3	20.0	65	290	244	46
4	8.0	66	234	190	44
5	5.0	55	230	220	10
6	3.0	51	230	210	20
7	9.0	45	320	333	-13
8	8.0	58	198	224	-26
9	11.0	51	250	221	29
10	14.0	60	160	180	-20
11	8.0	48	198	213	-15
12	1.0	58	180	256	-76
13	8.0	56	260	280	-20
14	5.0	72	142	150	-8
15	2.0	61	163	180	-17
16	18.0	43	250	220	30
17	9.0	52	270	240	30
18	8.0	58	270	150	120
19	6.0	55	330	280	50
20	9.0	57	180	209	-29

1. mon= Months of Eleotin Usage
2. yd= Years of Diabetes

- 3. age=Age of users
- 4. BGLb= BGL before Eleotin in mg/dl
- 5. BGLa=BGL after Eleotin in mg/dl
- 6. Changeb=BGLa-BGLb: Reduction of BGL in mg/dlA typical person in the control group was a 53 year old person who had been diabetic for 8 years and starting BGL was 218 mg/dl, while at the end of the period, BGL was 211 mg/dl. They all maintained their current therapies.

**3. Interpretations and Statistical Hypotheses Testing**

**1. Variances and Co-variances among Variables and Related Hypotheses Testing**

We report in Tables 2-A and 2-B) the variances and co-variances of the variables in the user group and control group statistics.

**Table 2-A) : variances and co-variances of the variables of user group statistics**

	mon	yd	age	BGLb	BGLa
mon	6.74				
yd	-0.22	60.39			
age	-1.69	22.27	167.49		
BGLb	22.17	-94.47	-189.87	13444.41	
BGLa	-20.46	-26.17	111.32	1984.41	3558.12

**Table 2-B) Variances and Covariances of Variables of Control Group statistics**

	yd	age	BGLb	BGLa
yd	24.24			
age	-7.94	52.87		
BGLb	80.35	-161.62	2731.84	
BGLa	-93.15	-4.12	1257.92	3944.89

mon= Months of Eleotin Usage

yd= Years of Diabetes

age=Age of users

BGLb= BGL before Eleotin in mg/dl

BGLa=BGL after Eleotin in mg/dl

Various tests show that a null hypothesis (H1: There is no difference in BGL reduction between the user group and control group) is rejected in favor of an alternative hypothesis (H2: the reduction of BGL in the user group is higher than that of control group) at a confidence level higher than 99%. For example, a linear regression model [Changeb = a + b(E); E=1 when Eleotin is used, E=0 when Eleotin is not used] produces 4.75 as a t value for the estimate for b, suggesting that the chance of usage of Eleotin not creating any better BGL reduction than the non usage is less than 1%. Eleotin user group seems to have experienced more BGL reduction than the control group. There seems to be no question about that. As was reported above, the user group showed an average drop of 130 mg/dl, while the control group showed an average drop of only 7 mg/dl. A high confidence level in any statistical investigation is natural.

Also, there is a high correlation between mon and BGLb: In the sample, people with serious people reported more months of usage: There is a highly negative correlation between mon and BGLa: A couple of test from the above statistics shows that a null hypothesis (H1: the length of Eleotin usage does not affect the size of the reduction of BGL) is rejected in favor of an alternative hypothesis (H2:

the length of Eleotin usage increases the size of the reduction of BGL) at a confidence level higher than 99%. Later, in this study, we will report a few of these tests under a few different test designs.

Also noteworthy is that in the user group the variance of BGLa is only 26% of the variance of BGLb. It means that while before Eleotin usage BGL's are very wildly dispersed across the individuals, after Eleotin BGL's are relatively concentrated toward the normal level. This interpersonal BGL stabilization, together with HbA1c reduction prevalent across all the users strongly suggests that Eleotin is not only effective in reducing the levels of BGL, but also very effective in reducing the fluctuation of BGL. In this regard we report the changes in GTT's of Users 64-70 in Table 2-C in which the fluctuations of GTT's from 0 minutes to 120 minutes become smaller for all the users as a result of Eleotin therapy. 50% drop in variance is normal.

**Table 2-C) GTT's (30, 60, 120 minutes) of Users 64-70**

	Before						After				
User ID	0	30	60	90	120		0	30	60	90	120
64	164	286	390	398	359		129	246	208	115	83
65	189	253	347	327	250		249	339	334	313	248
66	145	248	362	410	367		147	297	371	378	297
67	362	531	598	620	610		114	189	185	165	145
68	131	304	305	258	160		142	308	311	199	117
69	138	231	323	333	328		148	269	355	329	323
70	399				700		116				161

This corroborates our previous finding that Eleotin improves the insulin sensitivity (see Therapeutics of Eleotin: [www.Eastwoodcos.com](http://www.Eastwoodcos.com) Science Section ) This also suggests that Eleotin helps patients to fight hypoglycemia, as well as hyperglycemia. Furthermore, we report that for Users 53 to 59, who are Type I patients, the daily fluctuations of BGL, calculated as variance of Before Breakfast, Morning, Afternoon, Before Bed BGL, reduced by more than 15% to 40%.

Further, we looked at Table 3)

**Table 3) Variances and Covariances of Variables in User Group**

	Changeb	mon	yd	age	BGLb	BGLa
Changeb	13033.72					
mon	42.63	6.74				
yd	-68.31	-0.22	60.39			
age	-301.19	-1.69	22.27	167.49		
BGLb	11460.01	22.17	-94.47	-189.87	13444.41	
BGLa	-1573.71	-20.46	-26.17	111.32	1984.41	3558.12

mon= Months of Eleotin Usage

yd= Years of Diabetes

age=Age of users

BGLb= BGL before Eleotin in mg/dl

BGLa=BGL after Eleotin in mg/dl

Changeb = BGLa-BGLb: Reduction of BGL in mg/dl

### 3.2. Ordinary Least Square (OLS) Regression Analysis and Related Hypothesis Testing

We performed an OLS regression on the BGL reduction related statistics from the user group with a simple linear model:  $\text{Change in BGL} = a + b(\text{mon}) + c(\text{yd}) + d(\text{age}) + e(\text{BGLb})$ .

**Table 4) Result of Ordinary Least Square Regression of the user group**

	Coefficients	Standard Errors	t Statistics
Intercept	-89.69	35.2	-2.55
mon	3.36	2.47	1.36
yd	0.52	0.85	0.61
age	-0.88	0.51	-1.73
BGLb	0.84	0.06	15.02

R square value was 0.87

We observe that there is a serious reduction in the level of BGL variance as a result of Eleotin. In order to compare the user group with the control group, a comparison was done by way of performing OLS on the control group: The result is shown in Table 5)

**Table 5) OLS for control group**

The same liner model was used :  $\text{Change in BGL} = a + c(\text{yd}) + d(\text{age}) + e(\text{BGLb})$

	coefficients	Standard Errors	t statistics
intercept	-30.98	146.51	-0.21
yd	5.77	2.7	2.14
age	-1.2	1.92	-0.62
BGLb	0.3	0.27	1.09

R square value was 0.6

It was very difficult to attach any interpretation to the statistical results of the control group with a low value of R square. The only variable which gives statistically somewhat significant explanation is the years of diabetes. Statistically, we are better off by not attempting any interpretations for these control groups.

A null hypothesis (H1:Changes of BGL in the two groups are identical) is rejected in favor of an alternative hypothesis (H2: Change of BGL in the user group is larger than the changes of BGL in the control ) at a confidence level higher than 99%. A linear regression model [ $\text{Changeb} = a + b(E)$ :  $E=1$  when Eleotin is used,  $E=0$  when Eleotin is not used] produces 4.75 as a t value for the estimate for b, suggesting that the chance of usage of Eleotin not creating any better BGL reduction than the non usage is less than 1%.

If we perform an OLS for those people who used Eleotin less than 3 months, the results are

**Table 6) OLS for those who used Eleotin less than three months**

Change in BGL =  $a + c(\text{yd}) + d(\text{age}) + e(\text{BGLb})$

	Coefficients	Standard Errors	t Statistics
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Intercept	-1.67	103.63	-0.02
Mon	29	31	0.95
Yd	-0.41	2.3	-0.18
Age	-0.79	1.36	-0.57
BGLb	0.28	0.17	1.63

R square is 0.46

We compared the above Table with Table 7 in below.

**Table 7) OLS for those who used Eleotin for more than 3 months**

Change in BGL = a + c(yd) + d(age) + e(BGLb)

	Coefficients	Standard Errors	t Statistics
Intercept	-.72	33.9	-2.12
Mon	-1.08	2.54	-0.42
Yd	0.05	0.79	0.06
Age	-0.83	0.46	-1.82
BGLb	0.88	0.05	17.35

R square is 0.93

Comparison of Tables 4, 6, 7) shows that most of the statistical explanation in the user group is attributable to those who used Eleotin for more than 3 months.

For those people who used Eleotin for less than three months, we were reluctant to draw statistically strong conclusions that Eleotin is working even though the average BGL drop is from 251 to 187. We simply needed a larger sample to allow us such conclusions. For those who used more than 3 months, it is very obvious that the reduction of BGL happens almost surely. (R square is 93!) We could make a very strong statement. We can temporarily conclude that for those who used Eleotin for less than 3 months, we can still expect a significant drop in BGL. The drop will be in the range of 30-40% on the average, but, a chance of a particular person's experiencing such results is less than 50%, while if a person uses Eleotin for more than 3 months, then, it is almost sure that the person experiences significant drop in BGL. But, it should also be pointed out that in this current study most of the explanation comes from those people who used for more than 3 months. This suggests that in the future study, the researcher should design the samples in such a way that the sample size of the people who uses for less than 3 months should be a lot larger than the current study. We believe that in order to attain the same level of statistical sharpness the sample size of the people with less than 3 months usage should be three to four times larger than those people who used more than 3 months.

We further report Tables 8 and 9)

**Table 8) OLS results for those whose initial BGL is higher than 200**

	Coefficients	Standard Errors	t Values
Intercept	-134.74	50.33	-2.68
BGLb	0.95	0.09	10.93
Mon	2.84	3.22	0.88
Yd	0.71	1.07	0.66
Age	-0.81	0.65	-1.26

R square is 0.7

**Table 9) OLS results for those whose initial BGL is lower than 200**

	Coefficients	Standard Errors	t Values
Intercept	-34.37	51.19	-0.67
BGLb	0.61	0.28	2.15
Mon	4.27	2.54	1.68
Yd	0.19	1.1	0.18
Age	-0.98	0.57	-1.73

R square is 0.44

Here again, the contribution to the explanatory power by low initial BGL group is ambiguous. R square is only 0.44.

In sum, the contribution to the explanation power from those people who used Eleotin for more than 3 months and with starting BGL less than 200 are statistically ambiguous even though the averages are dropping significantly. Most of the statistical explanation came from those people who took Eleotin for more than 3 months with starting BGL higher than 200. This suggests that in the future study, the sample sizes should be greatly expanded in those groups whose contribution to the explanation is statistically ambiguous. In the mean time, there is no doubt that the higher beginning BGL is, the more drop results from Eleotin usage.

The ages of the patient is of course negatively related to the BGL drop. The younger person experience more drop in BGL in response to Eleotin. But, it is not dominant. The Year of diabetes is not really important either. The effects of Eleotin can be said to be statistically independent of ages of the patients and the years of suffering. This is somewhat different from the intuitions we had before this test. We had thought that the younger people and the more recent patients would show better responses to Eleotin. But, it did not turn out to be the case. The starting BGL and whether a person uses more than three month jointly are dominantly important factors from the statistical viewpoint at least for the user group in this study.

For practical purposes, one may build a quite reliable forecaster form Table 7) in such way that if a patient uses Eleotin more than three months,

Reduction in BGL is predicted quite reliably to be  $-1.08(\text{mon}) + 0.05(\text{yd}) - 0.83(\text{age}) + 0.88(\text{BGLb}) - 72$ .

For example, if a 55 year old patient whose initial BGL is 300 mg/dl and has been diabetic for 10 years, we can expect quite safely that if he uses Eleotin 4 months, BGL will drop by 142.5 mg/dl.

### 3. Other Observations (1): Type I patients

7 users were Type I patients (from User I.D 53 to 59). The infants (User I.D 58 to 59) took one quarter of the dosage which is 2 grams of Eleotin A, 2 grams of Eleotin B and two grams of Eleotin C. The changes of their insulin usage and some of other interesting figures are recorded in Table 10-A)

**Table 10-A) Additional information on Users 53 to 59 who are Type I diabetic**

User I.D. Starting Insulin Current Starting HbA1c Current Starting C-peptide Current Change b

53	80	80	7.4	n.a.	n.a.	n.a.	20
54	110	85	8.5	8.5	n.a.	n.a.	67
55	60	56	6.7	6.7	n.a.	n.a.	126
56	24	24	5.8	5.8	n.a.	n.a.	31
57	20	20	7.3	7.4	44	100	10
58	10	9	n.a.	7.4	n.a.	n.a.	220



59	14	18.5	n.a.	n.a.	n.a.	n.a.	120
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Because there were only 7 samples were available, we stayed away from drawing any statistical conclusions. But, the observations were encouraging. All of them showed significant drops in their BGL's. The testing for Type I patients may require longer periods.

### 3.5. Other observations (2): Dosage

Users 71 to 80 used full dosages 8 grams of Eleotins A B C each day, while all others, except users 58 and 59, who were infants and used one quarter dosage, used half dosages, that is to say, 4 grams of A B and C each day. There was another study the result of which is still to come, in which quarter dosage was tried on adults for the two months. The results were not impressive at all. Out of 17, none showed any change in their BGL. After two months, all the patients in that study doubled the dosage. Then, almost everybody showed clear reduction in BGL. We are still waiting for the data. At this moment, we still do not know whether the reduction in BGL is attributable the '3 month' symptom mentioned above, or, the effect is dosage specific. Further study in this area is warranted.

### 3.6. Other Observations (3): Other therapies

In Table 11, we show the other therapies patients had when they started Eleotin therapy. They were all instructed to maintain these therapies all throughout the trial. But, more than half of them either reduced the dosages of their other therapies or completely suspended all other therapies. Their non-compliance was due to the fact that some of them began to experience hypoglycemia as Eleotin began to take effects.

As the sample size grows, it would be possible in the future studies to establish when and how much current therapy can be replaced

**Table 11. Other Therapies When Patients Started Eleotin.**

User ID	Therapies	User ID	Therapies	User ID	Therapies	User ID	Therapies
1	O	21		41	I	61	O
2	O	22	O	42	I	62	O
3	O	23	O+	43	I	63	O
4		24	O	44	I	64	
5		25	O	45	I	65	O
6	O	26		46	I	66	I
7	O	27		47	I	67	I
8	I	28	O	48		68	O
9	O	29	O	49		69	
10		30	O	50	O	70	O+
11		31	O	51	O	71	I
12	O	32		52	O	72	I
13		33		53	I	73	I
14	O	34		54	I	74	I
15	O	35		55	I	75	I
16		36		56	I	76	I
17	O	37	I	57	I	77	I
18	O	38		58	I	78	I
19		39	I	59	I	79	I

20	0	40	1	60		80	1
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O: Oral Hypoglycemic Agents

I: Insulin

Empty cells represent either that patients were not taking any other therapies or that the patients stopped all other therapies. Other therapies at the end of the trial will be reported in the future study. In the meantime, please refer to section 4.2 which mentions the comparative therapeutic values of Eleotin.

### 3.7. Other Observation (4): Prevention of Hypoglycemia

As usual, we started by assuming that the BGL is governed by a normal distribution with an identical independent distribution. Fortunately, multicollinearity and heteroscedasticity were not serious so that we could afford to use simple OLS methods without sacrificing the unbiasedness and efficiency in statistical estimation. With this small sample size, it was a very valuable luck.

However, we should add one caveat about this linearity of the model. Even though the above linear model shows quite impressive statistical fitness, we still believe that a non linear model should be used in the future studies on a priori ground. Also, we maintain that such non-linearity would clearly show that the therapeutic value of Eleotin consists not only of the reduction of level of BGL in case of hyperglycemia, but also, preventing hypoglycemia.

The reason for the necessity of a non-linear model can be best explained by way of an example. In the conclusions of section 3.2, we mentioned a predictor. According to the predictor, when the initial BGL is below  $\{72+0.83(\text{age})+1.08(\text{mon})-0.05(\text{yd})\}/0.88$ , the usage of Eleotin increases BGL instead of decreasing BGL. If we insist upon using the above linear predictor without any modifications, the average person in the control group who is 53.6 year old person with 9.8 years of diabetes should have at least 136.6 mg/dl BGL, otherwise, he would not benefit from Eleotin at all. This is not the case from the observations of more than 7,000 users, animal tests, and, pharmacological data. Therefore we infer that a kink for the predictor should happen before around 130 mg/dl range. In other words, for the ranges of initial BGL lower than 130 mg/dl, we have a good reason why the above predictor should not be used unless modified. A predictor with higher intercept and lower coefficient for BGLb should be used. What we know is that for the low initial BGL range there should be more samples to attain the same sharpness in the predictor, which is quite consistent with our intuition.

The existence of such kinks and reduction of the absolute value of the slope as BGLb becomes smaller suggest that Eleotin not only reduces BGL levels, but, prevents hypoglycemia. This results are consistent with the findings of section 3.1 where it is reported the contribution of Eleotin to the reduction of the fluctuations of BGL, as well as the reduction in the level of BGL.

### 3.8. Sexes and Alcohol Consumption

The sexes of patients affected the changes of BGL in responses to Eleotin, but, not significant enough to be detected at the confidence level of 95%. We ran a linear regression  $\text{Change}_b = a + b(S)$  where S is one if male, 0 otherwise. The t value for the regression in the user group is 1.67.

We have reason to believe that alcohol consumption adversely affects the response to Eleotin. The responses were not recorded in the above because all the patients who consumed alcohol during the therapy did not show tangible improvement in their control of BGL, and dropped out of the test. There were 4 such patients.

## 4. Comments on Methodology

#### 4.1. Sampling and Degrees of Freedom

Many individual variations such as weight, other diseases, etc. are suppressed in order to optimize the degree of freedom in the above statistical study. In other words, we had to stop somewhere in our adding new explanatory variables unless there is accompanying increase of the sample size. We applied the author's discretion in the selection of the explanatory variables. But, we have the data on other variables so that we can add more explanatory variables in the future studies with larger samples.

#### 4.2. Comments on Control Group: Sensitivity Study of the Confidence Levels and Dosages.

Even though we use the term 'Control Group', we warn you that we did not follow the traditional protocol which is called a 'double blind' test in which fixed placebos are given.

Instead, we designated and observed a group of patients during the test period. We did not give them placebos.

Then we ran a series of linear regressions

[Changeb = a + b(E): E=1 when Eleotin is used, E=0 when Eleotin is not used, and, the control group's changes in BGL is raised by 100 mg/dl]

[Changeb = a + b(E): E=1 when Eleotin is used, E=0 when Eleotin is not used, and the control group's changes in BGL is raised by 70mg/dl]

[Changeb = a + b(E): E=1 when Eleotin is used, E=0 when Eleotin is not used and control group's changes in BGL is raised by 50mg/dl]

The changes in the t values for the estimates of b in the above linear model are as follows

When raised by 100 mg/dl, the t value is 1.09. When raised by 70 mg/dl, the t value is 2.06, and when raised by 50 mg/dl, the t value is 2.83. In other words, the usage of Eleotin will show statistically significant difference from the performance of any control groups as long as the control group were given a placebo, or, an alternative therapy which gives 70 mg/dl reduction in the BGL. In other words, the Eleotin can perform significantly better than whatever the patients use to reduce their BGL by 70 mg/dl. This result will help us to determine for whom switching from the current therapy to Eleotin is beneficial. If the current therapy belongs to any of the following category, a gradual switching to the Eleotin therapy should be seriously considered.

1. Current therapy reduces BGL by less than 70 mg/dl.
2. Current therapy has known side effects.
3. Current therapy has known resistance.
4. Current therapy has to continue indefinitely.
5. Current therapy causes hypoglycemia
6. Current therapy increases the fluctuations of BGL over the long run.

#### 5. Summary

1. A typical user was a 53.6 years old patient who had been diabetic for 9.8 years and whose initial BGL was 297.3 mg/dl. He used Eleotin for 3.9 months and his BGL dropped to 167.1 mg/dl.
2. A null hypothesis (H1: There is no difference in BGL reduction between the user group and control group) is rejected in favor of an alternative hypothesis (H2: the reduction of BGL in the user group is higher than that of control group) at a confidence level higher than 99%. We also found out that as long as the control group is given a therapy which reduces BGL by less than 70 mg/dl, the null hypotheses will be rejected at a confidence level of 95%.

3. A null hypothesis (H1: the length of Eleotin usage does not affect the size of the reduction of BGL) is rejected in favor of an alternative hypothesis (H2: the length of Eleotin usage increases the size of the reduction of BGL) at a confidence level higher than 99%.
4. Eleotin is not only effective in reducing the levels of BGL, but also very effective in reducing the fluctuation of BGL. It also prevents hypoglycemia.
5. Most of the statistical explanation in the user group is attributable to those who used Eleotin for more than 3 months.
6. The younger person experienced more drops in BGL in response to Eleotin. But, the ages of patients were not a dominant determinant of the Eleotin's effects. The years of diabetes is not really an important factor, either. The sexes of the patients were not an important factor, either. In other words, we can say that if one uses Eleotin for more than 3-4 months, people are quite likely to experience significant reductions in BGL regardless of their ages, sexes, and the years of diabetes, even though younger, male and newer patients did slightly better.

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