**The Therapeutics Of ELEOTIN In The Treatment Of Non-insulin Dependent Diabetes Mellitus (NIDDM)**

A report to inform diabetics and health care professionals of recent studies showing the therapeutic values of a herbal product developed in Canada for the treatment of non-insulin dependent diabetes mellitus (NIDDM). This report brings evidence to the diabetic and the professional health care practitioner that there is an effective non-toxic treatment for NIDDM, without side effects, that often results in a cure for the patient.

**Published By:**
**U.S. Research Reports, Inc.**
Post Office Box 7802
Metairie, LA. 7001**0**

**Introduction** This report is intended to inform diabetics and health care professionals of a recent study showing the therapeutic values of a herbal product developed in Canada for the treatment of non-insulin dependent diabetes mellitus (NIDDM).In addition to the most advanced drugs used in the treatment of NIDDM, there are reported to be more than 2,000 herbs that have the ability to lower sugar levels in the blood. However, many of these are toxic and have side effects and none of these are reported to have the effectiveness or cure rates achieved with the ELEOTIN herbal treatment studied in this report. In addition, as shown in this report, the current treatment of NIDDM with drugs has both toxicity and adverse side effects.As this report points out, NIDDM, unlike Type I diabetes where there is no insulin production by the pancreatic *ß* -cells, is not always caused by low levels of plasma insulin. Many patients with NIDDM have normal to high levels of insulin in the blood. In these cases, diabetes is not caused by a shortage of insulin, but may be the results of defects in the molecular machinery that mediates the action of insulin on its target cells. In other words, NIDDM is not always caused by the destruction of *ß*-cells in the pancreas but by other mechanisms, such as insulin resistance, related to down-regulation of insulin receptors, defects in insulin secretion from the pancreatic *ß* -cells and other changes to the glucose transporter system. In these regards, one of the most important benefits of the ELEOTIN therapy is its effectiveness in those diabetic cases involving insulin resistance, which is the condition described as follows:The pancreas usually continues to produce some insulin in people with NIDDM. However, the insulin fails to limit the level of glucose in the blood. When insulin is present in the blood but the blood fails to maintain a normal level of glucose, the condition is called "insulin resistance." Insulin resistance is an important factor in NIDDM. A defect in the insulin receptors on the surface of cells may cause insulin resistance. In some cases there may not be a sufficient number of receptors on the cells for insulin or defects in the receptors may prevent insulin from binding to the cells. Insulin resistance may also involve the step after insulin binds with the insulin receptor. For example, insulin may bind to the receptor but the next step that should take place inside the cell does not occur and the cells do not perform their glucose-controlling task.More often than not, the diabetic medicines of today become ineffective over time and the treated patient's health condition seriously deteriorates and often results in blindness, heart disease, amputations and death. Most current options of treatment provide symptomatic or temporary treatment rather than long term permanent solutions. ELEOTIN is a candidate for a long-term solution to diabetes and its complications.This report brings evidence to the diabetic and the professional health care practitioner that there is an effective treatment for NIDDM and it often results in a cure for the patient. Extensive research on over 800 herbs, and combinations thereof, by some of the world's most prominent physicians in the field of

diabetes has produced this non-toxic therapy. It is a shining star in the darkness that has surrounded diabetes for centuries.Reports of successful treatment and cures of NIDDM are being received daily as this report is being readied for publication and therefore supplemental reports and clinical studies will be published on this subject in the future.The information in this report has not been reviewed by any regulatory body such as the FDA and is not intended to replace instructions by physicians.U.S. RESEARCH REPORTS, INC.

# ELEOTIN : Promising New Treatment for Diabetes 1

Diabetes mellitus (hereinafter, diabetes) is a growing public health problem in both developed and developing countries. A recent World Health Organisation report estimated that more than 100 million people world-wide will suffer from diabetes by the end of this century.

Over 16 million people in the United States have diabetes, a serious life-long disorder. Almost half of these people do not know they have diabetes and are not under medical care. Each year, 500,000 to 700,000 people are diagnosed with diabetes in the United States.

## The Therapeutics Of ELEOTIN : 1.0 What is diabetes?

### 1.1. TYPE I (IDDM)

There are two major types of diabetes, Type I and Type II.

Type I, known as insulin-dependent diabetes mellitus (IDDM), is considered an autoimmune disease because the pancreatic cells that produce insulin, the *ß*-cells, are destroyed by the body's own immune system. The pancreas then produces little or no insulin. To live, the person with IDDM needs daily injections of insulin. At present, scientists do not know exactly what causes the body's immune system to attack the *ß*-cells, but they believe that both genetic factors and viruses may be involved (see reference 2). IDDM accounts for approximately 10 % of diagnosed diabetes in the United States.

IDDM usually develops in children or young adults, although the disorder can appear at any age. Symptoms of IDDM usually develop over a short period, although *ß*-cell destruction can begin months, or even years, earlier. Symptoms include increased thirst and urination, constant hunger, weight loss, blurred vision, and great tiredness. If not diagnosed and treated with insulin, the person can lapse into a life-threatening coma.

### 1.2. TYPE II (NIDDM)

Type II diabetes, also known as non-insulin-dependent diabetes mellitus (NIDDM), is much more common than Type I diabetes, affecting 80-90% of all persons with diabetes. (Thus, we use 'diabetes' and 'NIDDM' interchangeably unless there is a need to differentiate them clearly.) Initially, NIDDM is often of gradual onset in middle age. However, later stages of this disease are very severe, resulting in various long-term complications, such as kidney disease, heart disease, eye disease, nerve disease and others. These complications make diabetes a leading cause of death.

The symptoms of NIDDM can be vague to diagnose. The symptoms may include fatigue, nausea, frequent urination (particularly at night), and unusual thirst. Frequent urination is one way the body gets rid of excess glucose, and this loss of fluid leads to thirst.

Obesity is an important factor in NIDDM. Also, NIDDM develops more often in genetically

predisposed individuals.

The pathological changes in the pancreatic islets of patients with NIDDM are not always apparent. Many patients with NIDDM have normal to high plasma insulin levels. In these individuals, diabetes arises not from a shortage of insulin, but may arise from defects in the molecular machinery that mediates the action of insulin on its target cells.

In other words, NIDDM is not caused by *ß*-cell destruction but by other mechanisms, such as insulin resistance (see reference 3), related to downregulation of insulin receptors, defects in insulin secretion from the pancreatic *ß*-cells and other changes to the glucose transporter system.

### 1.3. COST AND TREATMENT OPTIONS

Diabetes, especially NIDDM, also has an enormous financial impact on society. In the U.S., the total economic cost of diabetes (comprised of medical care and lost productivity) was estimated to be $92 billion in 1992. The American Diabetes Association estimated the direct medical costs of diabetes at $45.2 billion. That included the cost of blood-sugar tests and insulin as well as the costs related to kidney failure, retinopathy and other diabetes-related illnesses. The American Diabetes Association also said the indirect costs of diabetes, such as lost productivity and premature death, equal $46.6 billion. World estimates would place the total economic cost of NIDDM conservatively at over 1 trillion dollars.

Presently, no oral hypoglycaemic agent or combination drug therapy exists to treat NIDDM patients without toxicity or side effects. Insulin treatment also provides symptomatic relief rather than a cure. When treatment with insulin is stopped in patients with severe NIDDM, blood glucose levels increase.

It means that most of the current options provide symptomatic or temporary treatment rather than a permanent solution. The void within the art of diabetic treatments in the prevention and/or long term cure of diabetes has not yet been filled.

### 1.4. ELEOTIN: PROMISING NEW TREATMENT FOR DIABETES

This report investigates some preliminary but very promising results about a substance called ELEOTIN. ELEOTIN shows a few attributes that establish itself as a strong candidate for a long-term solution to diabetes and its complications. Let us repeat that the tests are quite preliminary. But the test results clearly indicate:

* ELEOTIN enhances insulin secretion from pancreatic *ß*-cells

* ELEOTIN upregulates insulin receptors leading to an increase in insulin binding

* ELEOTIN inhibits breakdown of complex carbohydrates into monosaccharides

* ELEOTIN increases the glucose transporter (GLUT2) expression in *ß*-cells

In addition, ELEOTIN does not have any known side effects, toxicity, and does not develop any resistance.

## The Therapeutics Of ELEOTIN : 2.0. Experiments on ELEOTIN's Effects on Diabetes [1]

### 2.1. Background

#### 2.1.1. Eastwood Bio-Medical Research Inc.

Eastwood Bio-Medical Research Inc. (Eastwood) is a privately owned Canadian company engaged

in the development and commercialization of a safe and effective treatment for non-insulin dependent diabetes mellitus (NIDDM).

Eastwood's core technology, P-700 was originally discovered by one of the most highly respected scientists involved in diabetes research, and experts at various universities such as Yale University, University of Calgary and National Institute of Health. They have invested more than ten years screening various plant extracts to discover a suitable natural composition that provides a safe long-term solution for diabetes. P-700 was discovered following numerous experiments and modifications.

Using that technology, Eastwood developed ELEOTIN, a complex proprietary blend of herbs that helps general health promotion, as a dietary supplement.

**2.1.2. ELEOTIN**

Several years ago, as an unintended by-product from other research projects whose main targets were to find a clue to the anti-ageing substance from natural sources, an initial herbal combination that was effective in regulating blood glucose levels in diabetic animals was discovered. However, the control of blood glucose levels by this first herbal compound was not sufficient to normalize it, even though blood glucose levels after treatment with this first composition are statistically lower than that of untreated groups. Also, it was not determined whether this first composition had any lasting effects on blood glucose levels following the termination of the treatment. The original findings showed an impressive hypoglycemic compound. However, in order to use the substance for a long-term treatment of diabetes, Eastwood had to make numerous improvements and modifications upon this original combination.

The improvements and modifications resulted from the following work:

1) Literature search which produced candidate plants and plant parts,

2) Screening the candidate plants found in 1) through animal tests to find plants with tangible hypoglycemic efficacy and reliable non-toxicity,

3) A second screening of the candidate plants of step 2) with further animal tests to find a narrower list of plants which helped establish possible modes of actions for their hypoglycemic effects,

4) Trying different combinations of the plants which withstood the above screenings,

5) The compassionate human trials, and collection of testimonies,

6) And finally, small-scale systematic clinical trial.

What should be emphasized here as a noteworthy characteristic of the modification process is that all the above steps took place in an interactive fashion, and more than 700 different combinations of different plants have been tested so far.

The followings are some of the herbs contained in ELEOTIN: Platycodi Radix, Schizandrae Fructus, Capsella Bursa, Astragalus Membranaceus Bunge, Nycium Chinese, Dioscorea Japonica Thunberg, Acanthopanax Sessiliflorum SEEMAN.

| Parent Initials | The Duration of Disease (years) | The Duration of Treatment (Months) | BGL * Before Treatment (mg/dl) | BGL = After Treatment (mg/dl) | Treatment with Insulin After ELEOTIN |
|---|---|---|---|---|---|
| K.D. | 5 | 4 | 320 | 128 | No |
| B.H. | 11 | 3 | 380 | 132 | No |
| Y.S. | 7 | 6 | 398 | 180 | No |
| K.T. | 10 | 6 | 429 | 173 | No |
| P.T. | 15 | 6 | 469 | 210 | Yes |
| O.P. | 9 | 6 | 425 | 168 | No |
| T.Y. | 12 | 7 | 406 | 162 | Yes |
| J.S. | 13 | 8 | 417 | 132 | No |
| H.G. | 14 | 4 | 425 | 396 | No |
| L.H. | 12 | 4 | 396 | 178 | No |

#### 2.2. Summary of Experiment Results

In what follows, we provide some summaries of various test results in which a current version of ELEOTIN was used. At first, we will review the results of human testing and later animal testing.

## Human Test Results

#### 2.2.1. ELEOTIN Controls Blood Glucose Level in Diabetes Patients

ELEOTIN was administered to diabetes patients. The duration of treatment varied from 3 to 8 months. One result of these experiments is presented in Table 1.

Table 1. Effect of ELEOTIN on the Control of Blood Glucose in Diabetes Patients

| * BGL = Blood Glucose Level |
|---|

**(Additional human tests have been conducted, information available upon your request)**

In general, the blood glucose level of all diabetes patients to whom ELEOTIN was administered was lowered over the course of the treatment period.

In various follow-up tests performed in later days, the results are all consistent with the results reported above. However, great variation exists in blood glucose levels among these patients. For example, some patients (~30%) exhibited close to normal blood glucose levels (non-fasting blood glucose level of 120-140 mg/dl). Other patients (~40%) exhibited slightly higher than normal blood glucose levels (non-fasting blood glucose level of 146-178 mg/dl). The remaining patients (~30%) exhibited slightly higher blood glucose levels than all of the other patients (non-fasting blood glucose level of 187-240 mg/dl).

Diet, exercise, and stress, as well as genetic, environmental, and psychological factors may offer possible explanations for the variation. Differences in the genetic make-up among these patients results in different physiological conditions at the cellular and molecular level, such as different rates of insulin/receptor up-regulation and different levels of insulin secretion, insulin synthesis, and

GLUT2 protein synthesis. Environmental factors, diet, exercise, and stress may be different among diabetes patients. The psychological make-up of the patient (e.g. an individual's ability to deal with stress) is another important factor when examining the varied responses of diabetes patients to ELEOTIN.

It is noteworthy that some of the patients still have to rely on insulin treatment. Another interesting finding is that even after a few months of the ELEOTIN treatment and in spite of remarkable reduction of blood glucose levels in all the patients, the blood glucose level of any patient did not go below 128 mg/dl.

*Other findings from Eleotin's Human test results show:*

1) Alcohol consumption of any amount reduces the effect of ELEOTIN substantially. In one case, a patient who had suffered serious diabetes for a long time began to show remarkable improvement in all the symptoms related to diabetes after a month of ELEOTIN administration. His blood glucose level approached the normal level, and he was experiencing the improvement of general health.

However, as he resumed the alcoholic consumption from the end of the second month of ELEOTIN use, his blood glucose level reverted to where it was. Subsequently, the patient dropped out of the trial.

In another case, a young patient whose diabetes was recently onset did not stop the alcoholic consumption when he started ELEOTIN usage. The patient did not experience any improvement in the control of blood glucose level within two months. Subsequently the patient dropped out of the trial. So far Eastwood, at the present time, does not have any systematic studies on the effect of alcohol on the workings of ELEOTIN. The above two cases can be explained by many other factors. Also, the patients could have enjoyed beneficial effects of ELEOTIN even with their alcoholic consumption if they had just stayed a longer period. We report that there were cases where alcoholic consumption is negatively correlated with the beneficial effects of ELEOTIN. In any event, consumers taking ELEOTIN should try to minimize their alcohol intake.

2) The age of the patient and the duration of the disease are very important factors that determine the speed of the reduction of blood glucose levels in response to the administration of ELEOTIN. Generally, middle aged, recent onset cases (6 months to 1year) responded in a few weeks (reaching normal blood glucose levels in a matter of a couple of months) while older patients (over 70) with long histories of diabetes responded as slowly as a year and their blood glucose levels approached the normal levels within two years.

Regardless of the variation among diabetes patients in blood glucose level responses to ELEOTIN, the patients indicated that there was a substantial improvement in many of the general symptoms associated with diabetes. The improvements mentioned by these patients are as follows:

1) An increased amount of urine and reduced frequency of urination resulted.

2) Kidney discomfort, as a result of poor kidney function, is improved, resulting in greater comfort.

3) Interrupted sleep becomes sound.

4) Almost complete relief of pain and stiffness in joints took place.

5) General weakness and fatigue is replaced with an energetic physical condition.

6) Rough skin becomes smooth and soft.

In relation to the improvement of general health, it is noteworthy to mention that the flavonoids and vitamins in ELEOTIN seem to enhance the T cell levels boosting the immune system remarkably, thus helping the users better fight the infections frequently inflicted on diabetic patients.

Interestingly, all the patients felt the improvement of general health conditions before the blood glucose levels actually fell substantially. We interpret this as a consequence of Eleotin's combinatorial approach, which involves multiple modes of actions which will be explained in later

sections. However, we also note a danger that patients who are not monitoring their diabetes closely may have an unjustified sense of "having gotten well", too prematurely, resulting in premature discontinuance, or negligence of necessary diabetic treatment. In any way, the testimonies of general health promotion are prevalent and consistent. We find it psychologically invaluable considering the chronic nature of the disease in which patients often get depressed and feel helpless.

One interesting observation is that even though most patients experience substantial lowering of the blood glucose levels, they seldom experience full normalization. In other words, it is likely that after a few months of ELEOTIN treatment, the blood glucose level is going to stay slightly higher than the normal level. In contrast, the animals' blood glucose levels were fully normalized. This difference suggests that Eastwood may have to increase the administered dosage.

Another possible interpretation is that the marginal curative effects of ELEOTIN diminishes increasingly as the blood glucose levels approach the normal level, because ELEOTIN relies on 'mild organic signals' to the body rather than conveying strong chemical signals for its effect. Mild chemical signals conveyed to the body are likely to be responded more receptively, creating larger marginal curative effect, when the body is in a more serious condition of diabetes. The body may chose to ignore mild curative signals when the body is not in serious condition. The body may find it better off to stay in a blood glucose level slightly higher than to expensing a large effort to push the level to the normal level.

### 2.2.2. ELEOTIN Induces Blood Glucose Level Control Stability in Diabetic Patients

Three months after termination of treatment with ELEOTIN, the blood glucose levels of six out of seven patients did not change dramatically (Table 2). The blood glucose levels of one out of seven patients increased slightly (168mg/dl to 186mg/dl).

Table 2. Blood Glucose Levels of Diabetes Patients after Termination of the ELEOTIN Treatment

| Parent Initials | BGL * at Termination (mg/dl) | BGL* at 3 Months After Termination Of Treatment (mg/dl) |
|---|---|---|
| Y.S. | 180 | 183 |
| K.T. | 173 | 170 |
| K.D. | 128 | 134 |
| O.P. | 168 | 186 |
| B.H. | 132 | 134 |
| J.S. | 132 | 137 |
| L.H. | 178 | 175 |
| * BLG = Blood Glucose Level | | |

We find this result especially encouraging. We see some potential of ELEOTIN as a long-term treatment for diabetes, as well as a temporary treatment. Eastwood hypothesizes that the stable normalization of the blood glucose levels after the discontinuation of ELEOTIN treatment relates to the upregulation of insulin receptors and the regeneration of the *ß*-cells. Eastwood's beliefs are also supported by the consistent results from the animal tests that are reported later in this report.

## ANIMAL TEST RESULTS

In order to test the effect of ELEOTIN on diabetes and to ascertain the potential modes of actions of such effects, GK rats were used. The GK rat is considered to be one of the best animal models for diabetes. This model is characterized by impaired-glucose-insulin secretion and peripheral insulin resistance. Insulin secretion stimulated by glucose is markedly impaired in GK rats. Insulin response and sensitivity of glycogen synthesis, lipogenesis and DNA synthesis in hepatocytes from GK rats are markedly reduced as compared to non-diabetic control rats such as Wistar-Furth (WF). In GK rats, the islet structure was disrupted and areas of pronounced fibrosis were observed in the stroma. As the disease progressed, *ß*-cell degranulation was observed, but lymphocytic infiltration of the islet was not. Diabetic complications, such as neuropathy and nephropathy, were observed bio-chemically and morphologically.

Treatment of animals with ELEOTIN**?** results in lower levels of blood glucose, and following termination of treatment these blood glucose levels remain low. A period of time effective in treating diabetes may be defined as the length of time of treatment that is required to reduce, and possibly stabilize, blood glucose levels. Such a period of time may vary from about 1 to 20 months, more preferably this time could be from about 3 to 10 months.

### 2.2.3. ELEOTIN Reverses and Prevents Diabetes in Animals

The treatment of diabetic animals with ELEOTIN resulted in a significant decrease in the level of blood glucose and incidence of diabetes when compared to PBS-treated animals (Table 3, Figure 3A, 3B).

Table 3. Effect of ELEOTIN on GK Rats

| Duration Of Treatment (Months) | ELEOTIN | | PBS | |
|---|---|---|---|---|
| | BGL * (mg/dl) | Incidence Of Diabetes (%) | BGL * (mg/dl) | Incidence Of Diabetes (%) |
| 0 | 387+-19 | 90(18/20) | 381+-18 | 90(18/20) |
| 1 | 334+-23 | 80(16/20) | 390+-19 | 90(18/20) |
| 2 | 271+-29 | 70(14/20) | 403+-18 | 90(18/20) |
| 3 | 251+-36 | 60(12/20) | 387+-17 | 90(19/20) |
| 4 | 231+-39 | 50(10/20) | 393+-17 | 95(19/20) |
| 5 | 201+-43 | 35(7/20) | 395+-17 | 95(19/20) |
| 6 | 175+-36 | 25(5/20) | 389+-17 | 95(19/20) |
| 7 | 146+-41 | 15(3/20) | 394+-18 | 95(19/20) |
| *BGL = Bloog Glucose Level | | | | |
| Mean non-fasting blood glucose levels of normal (non-diabetic) Wistar Furth rats, aged 3 months to 7 months, is 145+-17 mg/dl. Any GK rats with a blood glucose level of 230 mg/dl, 5 SD above the mean, were considered diabetic. Rats were treated at 12 weeks of age. Each group contains 20 animals. | | | | |

It is apparent that ELEOTIN improves the control of blood glucose, resulting in the treatment of diabetes. When diabetic GK rats were treated with ELEOTIN for approximately 4-5 months, the level of blood glucose of 35-50% of GK rats dropped to the normal range when compared to PBS-treated animals. All PBS-untreated animals remained hyperglycaemic. Furthermore, when GK rats were treated with ELEOTIN for approximately 7 months, most of the animals (85%) exhibited normal glycaemia, while all untreated animals remained hyperglycaemic. The blood glucose level of ELEOTIN-treated GK rats was lowered to 146 mg/dl (Table 3).

#### Normalization and Stabilization of Blood Glucose Levels

Following treatment of GK rats with ELEOTIN for 7 months (Table 4), treatment was terminated and blood glucose levels were monitored for a further 3 months. As Table 4 indicates, after treatment

was terminated, symptoms did not return for the duration of the study (3 months).

Table 4. Effect of ELEOTIN on the Control of Blood Glucose Levels of GK Rats after Termination of Treatment

| Time Elapsed After Termination Of Treatment With ELEOTIN (Months) | BGL * (mg/dl) | Incidence Of Diabetes (%) |
|---|---|---|
| 0 | 146+-41 | 15(3/20) |
| 1 | 158+-39 | 20(4/20) |
| 2 | 165+-47 | 20(4/20) |
| 3 | 174+-42 | 25(5/20) |

**Prevention of Diabetes**

Table 5 provides data concerning the prevention of diabetes in GK rats. GK rats usually develop diabetes at 6 to 8 weeks of age. In this experiment, treatment of the GK rats with ELEOTIN (as indicated above) began at 3 weeks of age: before the onset of diabetes. As their blood glucose levels indicate, these animals did not develop diabetes and their blood glucose levels remain in the normal blood glucose range for the duration of the study. In the same study, PBS-treated GK rats exhibited very high blood glucose levels and developed diabetes. Thus ELEOTIN prevented the onset of diabetes.

Table 5 Effect of ELEOTIN on the Prevention of Diabetes in GK rates

| Age Of Animals (Weeks) | Treatment With ELEOTIN | | Treatment With PBS | |
|---|---|---|---|---|
| | BGL * (mg/dl) | Incidence Of Diabetes (%) | BGL * (mg/dl) | Incidence Of Diabetes (%) |
| 3 | 147+-31 | 0 (0/20) | 145+-21 | 0 (0/20) |
| 5 | 156+-27 | 0 (0/20) | 168+-21 | 0 (0/20) |
| 7 | 165+-34 | 5 (1/20) | 211+-48 | 25 (5/20) |
| 10 | 168+-40 | 10 (2/20) | 354+-39 | 70 (14/20) |
| *BGL = Blood Glucose Level | | | | |

On the basis of blood glucose levels, ELEOTIN prevents diabetes in GK rats when compared to PBS-treated GK rats. As Table 5 indicates, the blood glucose levels of ELEOTIN-treated GK rats are well within the normal range.

In summary, these results demonstrate that ELEOTIN is effective in treating (Table 3), stabilizing (Table 4), and preventing (Table 5) diabetes in animals. The results are consistent with and strongly supportive of the hypotheses of sections 2.2.1, 2.2.2, where similar indications are reported in human cases.

In order to determine the mechanisms involved in the lowering of the blood glucose level in diabetic animals, Eastwood examined insulin receptors present on hepatocytes and skeletal muscles, the secretion of insulin in the pancreatic *β*-cells, and the inhibition of alpha-glucohydrolase catalysed enzymatic reactions, which prevents the degradation of complex carbohydrates to monosaccharides.

### 2.2.4. ELEOTIN Upregulates the Insulin Receptors in Animals

Decreased insulin-stimulated glucose uptake is characteristic of insulin resistance. The

mechanisms involved in insulin resistance in diabetes is unclear, but may involve reduced insulin receptor numbers (secondary to hyperinsulinemia and hyperglycaemia), reduced tyrosine kinase activity of the insulin receptor, abnormalities distal to the receptor, and defects in the glucose transport system. Glucose transport activity in diabetes is decreased in both adipocytes and muscle.

To determine the effect ELEOTIN has on the expression of insulin receptors, Eastwood measured the rate at which insulin binds to receptors in ELEOTIN-treated GK rats. Briefly, insulin receptors were purified from control and ELEOTIN-treated GK rats using wheatgerm agglutinin (WGA) agarose (Klein et al 1986; Burant et al 1986; Vankatesan et al 1991). The rate at which insulin binds to solubilized receptors was determined using 125I-labelled insulin.

The rate at which insulin binds to partially purified insulin receptors from hepatocytes and muscles significantly increased in the ELEOTIN-treated group when compared to the PBS-treated control group (Tables 6A, 6B, Figures 6A, 6B). This difference is strongly suggestive of the up-regulation of insulin receptors in the presence of ELEOTIN. The rate at which insulin binds to the receptors from hepatocytes is greater than the rate at which insulin binds to skeletal muscle receptors.

These results indicate that ELEOTIN may enhance the expression of insulin receptors better in the liver. Eastwood has not yet formed any hypothesis regarding the differentiated upregulation between the receptors from hepatocytes and skeletal muscle receptors. However, Eastwood believes that this is not unrelated to some patients' testimonies of improved liver conditions after ELEOTIN treatment. Also, there was a case in which a patient with serious sclerosis for whom ELEOTIN did not produce speedy glucose lowering effects. At this moment, Eastwood believes that the liver plays an important role in the working of ELEOTIN.

Obviously, the effects of ELEOTIN in the upregulation of insulin receptors have significant therapeutic implications:

1) The upregulation of insulin receptors prevents hypoglycemia occasionally caused by excessive insulin secretion stimulated by such hypoglycemic agents as sulfonylurea.

2) Also, those people who have used insulin injection to control their blood glucose often experience that their needed effective dosage increases over time and the fluctuation of blood glucose levels increases its width. For those people, the upregulation of insulin receptors is significantly helpful to dampen the fluctuation of the blood glucose level and increase the therapeutic effectiveness of the insulin injection.

3) Testimonies of "feeling better", and " feeling more energetic" in response to ELEOTIN treatment seems to be a result of this upregulation of insulin receptors.

4) It is shown also that the blood glucose levels of ELEOTIN treated patients stayed normalized after the termination of ELEOTIN treatment. Eastwood attributes this post treatment normalization to the upregulation of insulin receptors, as well as other causes.

**TABLE 6A, FIGURE 6A**

Show the rate of attachment of insulin to receptors obtained from partially purified liver of PBS-treated GK rats and ELEOTIN extract-treated GK rats. Data represents the mean of 10 animals/ group.

**TABLE 6A**

| Insulin Concentration (ng/ml) | Specific Binding (% per 5 ug protein) ELEOTIN | Specific Binding (% per 5 ug protein) PBS |
|---|---|---|
| 1 | 21 | 16 |
| 5 | 18 | 13 |
| 10 | 12 | 9 |

| | | |
|---|---|---|
| 50 | 8 | 6 |
| 100 | 4 | 4 |

**TABLE 6B**

Show the rate at which insulin binds to receptors from partially purified skeletal muscle of the hind limb of PBS-treated GK rats and ELEOTIN extract-treated GK rats. Data represents the mean of 10 animals/group.

| Insulin Concentration (ng/ml) | Specific Binding (% per 5 ug protein) ELEOTIN | Specific Binding (% per 5 ug protein) PBS |
|---|---|---|
| 1 | 18 | 15 |
| 5 | 15 | 13 |
| 10 | 10 | 7 |
| 50 | 6 | 5 |
| 100 | 3 | 3 |

**2.2.5. ELEOTIN Increases the Secretion of Insulin in Animals**

In addition to the measurement of insulin receptors of hepatocytes and skeletal muscle, the level of insulin secretion in the pancreas was measured.

In lean, normal, non-diabetic persons, glucose levels are maintained by a balance between insulin secretion from pancreatic *ß*-cells and insulin action in the splanchnic (liver and gut) and peripheral (muscle and adipose) tissues. Diabetes develops when this balance is upset and impaired *ß*-cell function (decrease of insulin secretion), and/or abnormal insulin action (insulin resistance) occurs (Leahy et al 1990; Porte 1991; Reaven 1988). Therefore, the decrease of insulin secretion from the pancreatic *ß*-cells is one of the mechanisms involved in the development of diabetes. In the future, Eastwood will investigate into how ELEOTIN expresses itself in relation with the insulin secretion. For that purpose, PBS-treated or ELEOTIN-treated GK rats were anesthetized with phenobarbital. The pancreas was isolated and perfused as described in the references below. The perfusate (Krebs-Ringer bicarbonate buffer:118 Mn NaCl, 4 Mn Kcl, 2.5 Mn CaCl2, 1.2 Mn MgSO4, 1.2 Mn KH2PO4 25 Mn NaHCO3, 1.2 g/L bovine serum albumin, and 40 g/L dextran) containing 16 Mn glucose was used. The effluent was collected from the cannula in the portal vein at 2 minutes intervals and stored at -20 C. Insulin secretion was measured and calculated as described in Portha et al (1991) and Giriox et al (1983).

The results, as shown in Table 7 and Figure 7 demonstrate that the secretion of insulin from ELEOTIN-treated GK rats increased when compared to PBS-treated control GK rats. This data indicates that ELEOTIN enhances the secretion of insulin from pancreatic *ß*-cells as a result of an increase in the synthesis of insulin in the pancreatic *ß*-cells, and/or an acceleration of insulin secretion.

**TABLE 7, FIGURE 7**

Show the secretion of insulin in response to glucose from the perfused pancreas of PBS-treated GK rats and ELEOTIN extract-treated GK rats.

**TABLE 7**

| Time (Minutes) | Insulin Release (nmol/min) ELEOTIN | Insulin Release (nmol/min) PBS |
|---|---|---|
| 10 | .5 | .2 |
| 20 | .6 | .3 |

| | | |
|---|---|---|
| 30 | .7 | .3 |
| 40 | .6 | .2 |
| 50 | .7 | .3 |
| 55 | 3.0 | 2.2 |
| 60 | 1.5 | .5 |
| 65 | 1.6 | .4 |
| 70 | 1.8 | .4 |
| 75 | .4 | .9 |
| 80 | .3 | .5 |

**2.2.6. ELEOTIN Inhibits alpha-glucohydrolase Breakdown in Animals**

Complex carbohydrates present in the diet must be degraded to monosaccharides by alpha-glucohydrolase before they are absorbed in the gastrointestinal tract. In diabetes patients there is less biologically active insulin that utilizes absorbable glucose. Therefore, if the degradation of complex carbohydrates into monosaccharides is inhibited, the amount of absorbable glucose is significantly less, resulting in the requirement for insulin to decrease.

Analysing the inhibition of the degradation of complex carbohydrates into monosaccharides by alpha-glucohydrolase catalysed enzymatic reactions in ELEOTIN treated animals is an essential step to determine the helpfulness of ELEOTIN as a hypoglycaemic agent.

Thus, PBS-treated and ELEOTIN-treated WF rats were fasted overnight and heat-hydrolyzed starch (2g/kg) suspended in water (2g/20ml) was intubated. Fifty minutes later, blood samples were collected and blood glucose levels were determined.

Table 8 and Figure 8 represents the blood glucose level of WF rats administered PBS, PBS and starch, or ELEOTIN and starch. WF rats administered PBS exhibited the lowest blood glucose levels. WF rats administered PBS and starch exhibited the highest blood glucose levels. WF rats administered ELEOTIN and starch exhibited blood glucose levels that were lower than the levels found in WF rats administered PBS and starch, but higher than the levels found in WF rats administered PBS.

**TABLE 8, FIGURE 8**

**Show the effect of ELEOTIN extract on blood glucose from oral loads of carbohydrates in normal WF rats.**

| **Blood Glucose (mg/dl)** | |
|---|---|
| PBS | 82.5 |
| PBS + Starch | 130 |
| ELEOTIN + Starch | 95 |

**These results suggest that the degradation of complex carbohydrate is inhibited because the blood glucose levels of WF rats loaded with carbohydrates (starch) and treated with ELEOTIN were lower than WF rats treated with PBS and loaded with carbohydrates. Because both insulin secretion and insulin action are normal in WF rats, the lower blood glucose level of ELEOTIN-treated rats must have resulted from a lower rate of degradation of complex carbohydrates to monosaccharides, resulting in a decrease of absorbable glucose. Since alpha-glucohydrolase is required for the degradation of complex carbohydrates to monosaccharides, this enzyme must be decreased in ELEOTIN-treated WF rats. In other words, the degradation of starch was inhibited in ELEOTIN-treated WF rats, suggesting that intestinal alpha-glucohydrolase significantly decreased in ELEOTIN-treated WF rats when compared to PBS-treated WF rats.**

**2.2.7. ELEOTIN Increases the Glucose Transporter in Animals**

**Glucose enters the *β*-cells through a membrane-bound facilitated transporter that is designated GLUT2, or the liver *β*-cell transporter. It has been proposed that impaired glucose entry into *β*-cells causes a loss of glucose-induced insulin secretion in diabetes patients. This hypothesis is based on the observation that every hyperglycaemic rodent model exhibits a marked reduction of GLUT2 protein in their *β*-cells.**

**To determine whether the level of GLUT2 protein in the pancreatic *β*-cells increases in ELEOTIN-treated animals, a Western blot was performed with pancreatic islet homogenates from ELEOTIN-treated GK rats and PBS-treated control GK rats. Preliminary experimental data reveal that ELEOTIN-treated GK rats show an increased level of GLUT2 protein in the pancreatic *β*-cells when compared to PBS-treated control GK rats. This result suggests that ELEOTIN may improve glucose transport by increasing the level of transporter protein.**

**2.2.8. Advantages of Combinatorial Approach**

**The combinatorial approach with a few modes of actions has a few definite advantages, compared with single mode of action approach.**

**Firstly, the therapeutic burden on a particular mode is relatively light for the same therapeutic result. Thus, the strain of the therapy on a particular organ, such as kidney and liver, can be lightened by choosing this combinatorial approach.**

**Secondly, there seems to be certain synergistic effects among these different modes of actions when they are set to work simultaneously. Both quantitative and qualitative results suggest that the combinatorial effect of ELEOTIN is definitely superior to the sum of the effects of individual ingredient. In other words, let's say herb A has a known mode of action I, and herb B has a known mode of action I, too. Roughly speaking, better therapeutic results are observed when a mixture of half dosages of A and B is used than when either of full dosages of A or B is used. Eastwood believes that slightly different chemical structures of complex compounds help the body to lower its resistance to the therapeutically beneficial substance.**

**However, we present the above result very carefully because in the course of the modifications of previous versions of ELEOTIN Eastwood also found that some combinations can actually synergistically increase the potential toxicity of each component without increasing the beneficial effects of ELEOTIN. In other words, some combinations may work adversely when mixed together. Eastwood has yet to identify a suitable mechanism of interactions which fully explains these evasive observations. At this moment, Eastwood is satisfied with the discovery of a synergistically superior combination. See the chart below.**

**2.3. Other Trials and Experiments**

**2.3.1. Toxicity Test of ELEOTIN in Animals**

**ELEOTIN appears to be safe for long term use. It is a herbal combination and all of its ingredients have been used for many thousand years in various countries. And they are recorded as safe in various pharmacopoeia and food codes. For example, all the ingredients of ELEOTIN described in section 2.1.2. are items usable as food ingredient according to the food codes of Korea, China, Japan, and most of other south east Asian countries. Also, the pharmacopia of a few European countries such as the Netherland show most of the ingredients as safe. For US and Canada, all the ingredients are importable, thus usable as drug and food. The usage of the ingredients has been properly reported to and approved by the food and drug related regulatory bodies. In order to confirm the safety, a toxicity test with animals was performed as below.**

**WF rats or SJL/J mice were administered the ELEOTIN extract (50 mg/g body weight i.e., 10x's the regular dose) every day for seven months. Each animal was sacrificed by $CO_2$ asphyxiation. The esophagus, stomach, intestine, lung, heart, kidney, liver, brain and pancreas of each animal was removed. A small piece of each organ was fixed with formalin and stained with hematoxylin and eosin as described elsewhere (Baek, H.S., and Yoon, J.W. (1990). The stained sections were examined under a microscope (Figure 9).**

**Esophagus, Stomach, and Intestine: The esophagus (Figure 9A), stomach (Figure 9B) and intestine (Figure 9C) showed intact mucosae and lacked inflammatory cell infiltrates or other features of cellular injury or necrosis.**

**Liver: The liver (Figure 9D) showed well-defined lobules and cords of hepatocytes separated by anastomosing sinuses and central vein, with no mononuclear cell infiltration, necrosis, or intranuclear glycogen infiltration.**

**Kidney: The kidney (Figure 9E) showed intact glomeruli, tubules and vessels. Glomerular changes, tubular strophy, interstitial lymphocytic infiltration and necrosis were not observed.**

**Lung: A few dispersed macrophages and normal appearing alveoli, bronchioles, bronchi and vessels were present in the lungs (Figure 9F).**

**Heart: The endocardium and myocardium of the heart (Figure 9G) were normal.**

**Brain: Nerve and glial cells of the cerebral cortex (Figure 9H) exhibited no evidence of necrosis, haemorrhage or infarction.**

**Pancreas: Endocrine and exocrine cells exhibited intact morphology. No necrosis or lymphocytic infiltration was evident.**

**The data above indicate that even very high doses of ELEOTIN administered over an extended period of time, did not have any deleterious effects on these organs.**

**Shows the histological profile of the following tissues from WF rats: Figure 9A Esophagus; Figure 9B Stomach; Figure 9C Intestine; Figure 9D Liver, Figure 9E Kidney, Figure 9F Lung; Figure 9G Heart; Figure 9H Cerebral Cortex (x250), after 7 months treatment with 10x's the regular dose of ELEOTIN.**

**2.3.2 Further Studies : Implications on Type I**

**ELEOTIN not only stimulates *ß*-cells to secrete insulin but also it seems to assist *ß*-cells regenerate themselves.**

**Sulfonylurea agents, taken by more than half of the diabetic population, also promote insulin secretion. However, they function only when *ß*-cells synthesize insulin. And it is reported that they often result in an inadequate amount of insulin secretion by putting strain on the cells.**

**In contrast, ELEOTIN seems to help insulin secretion and regeneration of *ß*-cells through general health promotion.**

**Eastwood has tried ELEOTIN on a few type I patients. They also reported some improvement in control of blood glucose level as a result of ELEOTIN treatment. Eastwood hypothetically attributes such improvement to the aforementioned regeneration of *ß*-cells.**

## The Therapeutics Of ELEOTIN : 3.0. Comparison of ELEOTIN with Other Treatments

### 3.1. Comparison of ELEOTIN with Chemical Hypoglycaemic Agents

ELEOTIN has a few advantages and disadvantages compared with available oral chemical drugs.

### 3.1.1. Advantages of ELEOTIN

The advantages of ELEOTIN in comparison with oral chemical hypoglycemic agents are as follows.

At first, ELEOTIN does not have any adverse side effects while most of oral hypoglycemic agents have. (For more details, see Appendix 1)

Secondly, ELEOTIN does not develop any resistance, while most chemical hypoglycemic agents do. In other words, the effect of ELEOTIN does not diminish even when one uses ELEOTIN for a long time.

Thirdly, ELEOTIN is safe for long term use or for the consumption of large quantity, while other chemical hypoglycemic agents often creates fatal consequences when taken in large quantities, unsuitable for long term use.

Fourthly, the beneficial effects of ELEOTIN seem to last for substantial periods, often as long as years after the termination of the usage, while chemical agents have only temporary effects on the control of blood glucose levels.

Fifthly, ELEOTIN seems to bring about the improvement of general health conditions for its users. Even though the general health promotion effects of ELEOTIN is hard to quantify, most of users report less fatigue, improved sleeping, better skin conditions, improved memory, and so on. No chemical agents bring about these benefits.

### 3.1.2. Disadvantages of ELEOTIN

There are certain disadvantages of ELEOTIN in comparison with other oral hypoglycemic agents.

Firstly, ELEOTIN's active ingredients are not yet known and they will be difficult to isolate in the near future. Considering that there are usually more than 200 secondary metabolites in a plant, and there are more than ten herbs and plants in the composition of ELEOTIN the possible combinations of active ingredients in ELEOTIN are of almost an infinite number. Even so, Eastwood believes they have a few strong candidates as to the primary active ingredients - a few versions of flavonoids and a few types of potassium salts.

Unidentified active ingredients, what statisticians refer to as stochastic explanatory variables, may create statistical problems such as biased and inefficient inferences. Our current statistical inferences presented in this report are quite safe from those problems. Also, the sale of ELEOTIN as a drug with clear therapeutic claims will not be possible until Eastwood solves this active ingredient identification.

This active ingredient problem is common to most of phytopharmaceutical medicines and fortunately people's attitudes toward these medicines are changing rapidly in recent days. After all, if a certain substance is safe for a long- term use and effective in the treatment of some serious diseases, the practical value of using the substance (without fully knowing what the active ingredients are) is something we should not ignore. There is a trade off between such practical value of using the substance for known efficacy and safety on the

one hand, and the prudence of not using it until all the ingredients are fully known. We would like to point out that it is a matter of individual choice within regulatory environments, rather than a matter of scientific rules.

Secondly, because ELEOTIN's ingredients are all from natural herbs, the uniformity of ELEOTIN's efficacy is inherently limited. The location and timing of harvest, the conditions of storage after the harvest, etc. contributed to the lack of uniformity. The lack of uniformity adds to the difficulties of forming scientifically acceptable conclusions from the experiments and testimonies.

Thirdly, more often than not, the availability and the quality of a certain herbs are not sufficiently reliable. Some herbs are simply not available sometimes, and some herbs are dangerously contaminated due to the use of pesticides and harmful fertilizers.5 The procurement and the quality control of the material often increase the cost of the production prohibitively, endangering the feasibility of commercialization. By the year-end of 1998, there is going to be an agricultural project in a tropical area where some of the essential herbs for ELEOTIN are going to be grown organically in a controlled environment. This project will provide partial solutions to the problems of limited uniformity and limited bio-availability.

Fourthly, the method of taking ELEOTIN is still quite inconvenient to those people who did not grow up in the tradition of preparing oriental herb mix which invariably involves long hours of brewing. A few researchers argue that making ELEOTIN into a tablet form does, in fact, increase the efficacy, as well as, the convenience of the usage. Eastwood has studied the process of making ELEOTIN into a tablet form. This can be achieved through a spray dry process. However, Eastwood decided not to venture into forming any conclusions regarding the safety and efficacy of tablet form because they have not yet experimented with ELEOTIN in a tablet form long enough.

Fifthly, the analytic studies on ELEOTIN are still in their initial stages. Even though there are positive results defendable at high levels of statistical confidence, Eastwood still requires a huge sample size to procure a comfortable degree of freedom in statistical inference. In other words, when we deal with statistical analysis of such complex diseases as diabetes, we need to have a lot larger size of samples to arrive at the same level of statistical confidence. For now, we feel that these are promising results which warrant a larger scale study. Eastwood is expected to conduct a large scale study on ELEOTIN starting in December 1998.

**3.2. Comparison of ELEOTIN with Traditional Hypoglycemic Treatment**

We know that there are more than 1000 herbs which are used traditionally in various countries as hypoglycemic agents. However, we believe that ELEOTIN has certain advantages when compared with these traditional hypoglycemic treatments in general.

Firstly, for ELEOTIN there have been systematic studies on what modes of actions are involved both in the working of each individual herb and various combinations thereof, while most traditional hypoglycemic herbs are used just for their alleged overall hypoglycemic effects. The knowledge of the modes of actions allows us to minimize the dosage of ELEOTIN administration while maintaining the efficacy. Also, the same knowledge allows us use of ELEOTIN in conjunction with other therapies such as insulin injection and oral chemical hypoglycemic agents.

We strongly warn the danger of using certain herbs just for their overall and general hypoglycemic effects. Diabetes is a complex disease with many causes and mechanisms.

Usage of certain herbs or any other substances for their overall hypoglycemic effects without minimal understanding of specific modes of actions runs the risk of over burdening certain parts of body. For example, when *ß*-cells are already strained in a severely diabetic patient, usage of herbs that promote insulin secretion will only aggravate the strains on the *ß*-cells. Knowledge of modes of action is essential for intelligent management and treatment of diabetes.

Secondly, the usage of ELEOTIN has been recorded and analyzed in a statistically systematic manner, while the knowledge of other traditional hypoglycemic herbs are mostly based upon folkloric traditions and oral anecdotes.

Especially, traditional herbs from a highly populated area such as India and China often come with a claim of a large number of satisfied patients. A typical claim is such as "87% of 300,000 patients are cured" etc. Such numbers should not overly impress us because the numbers themselves are seldom confirmable. To the best of our knowledge, as of April 1998, researchers of China and India are still searching for a treatment for diabetes. However, there are sometimes impressive empirical studies regarding some of the traditional herbs.

Thirdly, ELEOTIN is tested to be free of any toxicity or toxic substance, while many traditional herbs are either toxic or dangerously contaminated with pesticides and other harmful substances such as heavy metals. The methodologies of the tests are as follows:

* Standard Plate Count as described in Compendium of Methods for the Microbiological Examination of Foods, 2nd edition, 1984, Chapter 4.51, p66-82

* E. Colit- as described in Petri Firm-AOAC 991.14

* Samonella- as described in Compendium of Analytical Methods, HPB Methods of Microbiological Analysis of Foods 2, MFHPB- 20 September, 1978

* Staphylococcus aureus- as described in Compendium of Analytical Methods, HPB Methods of Microbiological Analysis of Foods, MFHPB- 21 July, 1985

* Yeast and Mold- as described in Standard Methods for Examination of Diary Products, 16th edition, 1992, 8.10, p.281-283.

* Meat Species ID.- as described in CO 16- Elisa-Tek cooked meat inspection kit.

* AA- Metal Analysis in food- as described in AOAC, 15th edition, 1990, 986.15, p.237-273.

* Pesticides- as described in Agricultural Canada, Food Production and Inspection, Laboratory Services Division, L.S.D. P-Pre-023-93(5)-FV, march 1993

The results of the above tests are all certified by proper regulatory agencies of Canada.

It is often claimed if a substances is natural, then it is safe and free from side-effects. Actually, nothing is further from the truth. Of about 1,000 herbs and plants with hypoglycemic effects, at least half are known to have toxicity in one form or another, and only a fraction (less than 5%) are known to be non toxic. Therefore, we should warn that the majority of traditional hypoglycemic treatments are not free of toxicity and side effects.6

However, the comparison of ELEOTIN with traditional hypoglycemic herbs is an evasive issue which does not justify a sweeping conclusion. All the advantages of ELEOTIN with respect to traditional herbs are of rather relative and temporary nature. Knowing that there is

a massive amount of research activities being invested in the studies of traditional herbs these days, we can not exclude the possibility that these studies may produce, sooner or later, a herb or some combinations of herbs which provide a better treatment for diabetes than ELEOTIN.

## The Therapeutics Of ELEOTIN : 4.0. How to Use ELEOTIN

### 4.1. How Does ELEOTIN Provide a Balanced Therapy?

#### 4.1.1. Usage

ELEOTIN is composed of three different herbal plant combinations which work together synergistically to provide an overall balanced treatment. Each formula is taken at a different time of the day to provide maximum and total benefit.

| Formula | Direction | Purpose |
|---|---|---|
| A | 30 minutes before meals | Lowers the blood glucose level after meals by stimulating insulin secretion |
| B | On an empty stomach | Strengthens the function of insulin receptors |
| C | Before bedtime | Creates and strengthens *β*-cells |

ELEOTIN is to be consumed as a supplement to your regular diet. To benefit fully from ELEOTIN, Eastwood recommends that you observe a regime that includes a well-balanced diet and low fat, high fibre foods, regular exercise and abstention from alcohol. It is important to follow the directions for use carefully and take each formula at the appropriate time to achieve the best results.

The importance of diet, exercise, and stress management cannot be overly emphasised in the successful management of diabetes type II even when ELEOTIN is administered. Diet, exercise, and stress, as well as genetic, environmental, and psychological factors may offer possible explanations for the variation that exists among diabetes type II patients in response to ELEOTIN administration. Differences in the genetic make-up among diabetics results in different physiological conditions at the cellular and molecular level, such as different rates of insulin receptor up-regulation and different levels of insulin secretion, insulin synthesis, and GLUT2 protein synthesis.

#### 4.1.2. Cautions

It is obvious that a diabetic patient should not stop taking hypoglycemic drugs until his blood glucose level reduces and fully stabilizes due to ELEOTIN's effects. We can not emphasize too strongly the danger of premature discontinuance of other diabetic treatments when ELEOTIN is administered. The danger of premature discontinuance of other diabetic treatment is all the more serious because patients who begin to feel remarkable improvement of general health conditions are easily tempted to discontinue chemically based hypoglycemic drugs.

According to our experience, patients often misinterpret the general improvement of health for the sign of being cured of diabetes as ELEOTIN users experience the general health improvement prior to the cure of diabetes itself. Diabetes is a serious disease. Patients should use common sense. They should not stop effective treatments just because they feel well for some time.

However, there are also not so infrequent cases where patients experience hypoglycemia because they continue to take other hypoglycemic agents even after ELEOTIN's curative effects helped the body to naturally reduce and stabilize the blood glucose levels. In that case, hypoglycemic drugs simply overkill. Clearly, ELEOTIN does not cause hypoglycemia. ELEOTIN just normalizes blood glucose levels, while hypoglycemic agents further push down blood glucose levels, causing hypoglycemia. In fact, ELEOTIN's up-regulation of insulin receptors is an effective defensive mechanism against potential hypoglycemia caused by excessive secretion of insulin stimulated by chemical hypoglycemic agents especially such as sulfonylurea. So, regular monitoring, and regular consulting with the physicians are always needed.

People who have suffered diabetes for a long time, and heard about remarkably encouraging results of ELEOTIN tend to be so impatient to experience the benefits that they often overdose themselves with needlessly excessive amounts of ELEOTIN, expecting quicker and stronger results. Of course, ELEOTIN itself is quite safe even when consumed in substantial quantities.

However, drinking too much water with ELEOTIN from time to time creates emergency situations for those people with serious urination problems from kidney failure. Even though these patients can experience remarkable improvement of this urination problem in the long run when they slowly increase the ELEOTIN consumption, they should start with a very small quantity such as 1 gram per serving. If the daily water intake is limited, they can start the ELEOTIN treatment without any preparation. They can just take small quantity of the powder itself until the urination function is improved.

Recovery of urination functions, and improvements of kidney health are the most common testimonies of ELEOTIN users.

We strongly recommend the patient to take prudent and moderate approach toward ELEOTIN treatment. Also, as ELEOTIN is not an inexpensive treatment anyhow due to the scarcity of material and difficulty of quality control, there are little benefits to gain from the excessive consumption. Another reason for moderate use of ELEOTIN is that one of the fundamental philosophy behind the working of ELEOTIN prescribe a combinatorial, thus mild approach toward this chronic disease. Excessive consumption may defeat the basic spirit of such a synergistic approach even though no harmful consequences will result. What body needs is a correct signal, not a strong signal. We do not push the button for a higher floor harder. We just push the right button. We invite the users to take prudent and moderate approach.

### 4.2. Preparation for All 3 Formulas

#### 4.2.1. Stove Top or Slow Cook

- Open one 8-gram pouch and pour into 360 ml (1-1/2 cups) of water.
- Cook on low heat for 1 to 2 hours until reduced by half.
- Do not boil.
- Sediment is drinkable but in rare cases may produce stomach upset. If so, drink liquid only, or reduce quantity.
- If you are unaccustomed to herbal products, you may start with a smaller quantity, such as 4 grams (1/2 pouch), and increase gradually.
- You may prepare 2 to 3 servings at one time. Store in a tightly sealed bottle and refrigerate.
- Drink warm.

#### 4.2.2. Alternative Preparations

Separate preparation described above surely means substantial inconvenience. Eastwood found that users who mix all three and treat them as one formula still enjoy many of the desirable effects of ELEOTIN.

However, there seems to be some sacrifice in the speed at which the beneficial power of ELEOTIN takes full effect. In extreme case, some users who mix all three formulas then simply consume the powder directly without any further preparation, still experience quite impressive results.

However, Eastwood believes that some ingredients and nutrients should be heated for an adequate amount of time in order to be extracted from the fibers in which the ingredients are embedded so that in forms optimal

digestion and absorption can be attained. Also, we found that the effects of ELEOTIN stayed almost intact when prepared with Microwave ovens like

(1) Open one 8-gram pouch and pour into 200 ml (3/4 cup) of water.

(2) Cook 10 to 20 minutes with medium to low heat until volume is 180 ml.

(3) Do not boil. Do not overflow.

(4) Sediment is drinkable but in rare cases may produce stomach upset. If so, drink liquid only,
or reduce quantity.

(5) If you are unaccustomed to herbal products, you may start with a smaller quantity,
such as 4 grams (1/2 pouch), and increase gradually.

(6) You may prepare 2 to 3 servings at one time. Store in a tightly sealed bottle and refrigerate.

(7) Drink warm.

We found that when ELEOTIN is prepared with higher heat, the taste often becomes somewhat bitter. We recommend a slow simmering like preparation rather than a quick boiling. Eastwood is currently working on making ELEOTIN in a convenient tablet form, and testing whether the efficacy and the safety will stay the same. A more convenient form of ELEOTIN will be available for consumers in the near future, however it may be slightly more expensive.

### 4.3. How Long Does It Take to Benefit from ELEOTIN?

Treatment with ELEOTIN results in lower levels of blood glucose, and following termination of treatment these blood glucose levels remain low.

The beneficial effects of ELEOTIN are apparent within a period of 3 to 12 months and ELEOTIN continues to demonstrate beneficial effects for the duration of the treatment period.

| Type of patient | When you will experience beneficial effects | When you will be able to reduce your daily consumption of ELEOTIN |
|---|---|---|

| | | |
|---|---|---|
| Patient with mild symptoms7 | Approximately 3 months | Approximately 6 months |
| Patient with severe symptoms8 | Approximately 6 months | Approximately 1 to 2 years |
| Patient with impaired function of ß-cells | 6 months to 1 year | Several years |

ELEOTIN does not affect diabetes type II patients in a uniform manner. Genetic factors and environmental factors, such as diet and exercise, may vary the response of individuals to ELEOTIN.

**The Therapeutics Of ELEOTIN : 5.0. SUMMARY**

ELEOTIN is a new herbal combination treatment of Type II diabetes, also known as non-insulin-dependent diabetes mellitus (NIDDM). ELEOTIN comprises several medicinal plants proved effective in reducing blood glucose levels in diabetic animals. ELEOTIN also proved effective in restoring general health of diabetic patients. The possible mechanism of action of the composition involves a combination of

1) Increased expression of insulin receptors in hepatocytes and skeletal muscles,

2) Increased insulin secretion in pancreatic ß-cells,

3) Inhibition of alpha-glucohydrolase activity,

4) Increase in the levels of the GLUT (glucose transporter) 2 protein in pancreatic ß-cells.

ELEOTIN also proved effective in reducing blood glucose levels and restoring the general health of diabetic humans.

Therapeutic implications of the above findings are:

1) ELEOTIN seems to be a strong candidate for both a short-term and long-term treatment of NIDDM.

2) ELEOTIN is safe for a long-term use due to its non-toxicity and combination approach.

3) ELEOTIIN seems to provide safeguards against occasional hypoglycemia.

4) ELEOTIN seems to be not only compatible with but also supportive of other diabetes related treatment such as insulin injection and oral hypoglycemic agents.

5) ELEOTIN does not seem to develop any resistance with long-term usage.

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