

Yu Xiao San 8805 on Type I and Type II Diabetes and Hypoglycemic Effects of Selected Ingredients

Background:

Yu Xiao San 8805, a Traditional Chinese Medicine formulated by Dr. Lian Jin Chong, is designed to restore pancreatic function and to proliferate insulin beta cells. Yu Xiao San has been shown to gradually and effectively lower blood-sugar levels and increase insulin secretion. In addition it has been shown to regulate carbohydrate metabolism, improve blood circulation, lower blood cholesterol and increase immune response¹. The main herb components are Gui Jian Yu (*Euonymus alatus*), Di Gu Pi, (*Cortex Lycii Radicis*), Niu Bang Zi (*Arctium Lappa L.*), Jie Geng (*Platycodon Grandiflorum*), Li Zhi He (*Litchi Chinensis*), Jiang Huang (*Curcuma longa*), Xi Yang Shen (*Panax quinquefolium L.*)

Clinical Results:

From Feb. 1992 to Oct. 1992, 10,618 cases were selected based upon the diagnostic criteria established for diabetes mellitus by the World Health Organization. The patients were drawn for clinical assessment from the formerly China Beijing Chao Yang District Red Cross Hospital (presently Beijing Anyuan Hospital) and from 48 comparable hospitals nationwide.

Treatment Criteria and Result

Clinical Recovery: The preferred criterion: FPG (Fasting Plasma Glucose) <6.1 mmol/L (110 mg/dl), HbA1c <6.8%; symptoms and complications recovery; discontinuing medication after 3 months or more.

Prominent Effect: FPG <7.8 mmol/L (140 mg/dl), HbA1c <8%; symptoms improved and complications reduced.

Effective: FPG reduced 3.33 mmol/L (60 mg/dl), HbA1c <9%.

Ineffective: No evidence of symptom improvement and reduction of criteria established for diabetes mellitus.

Results

¹ Choate, Clinton, J., L.Ac., MTOM, Dip.NBAO, "Modern Medicine and Traditional Chinese Medicine - Diabetes Mellitus", *Journal of Chinese Medicine*, No. 60, May. 1999.

After 4 months of treatment and monitoring, of patients with Type 1 diabetes, 84 (6.80%) demonstrated clinical recovery, 106 (8.58%) prominent effect, 144 (11.65%) some effect, and 902 (72.98%) no effect. Over the same period, 1794 (19.12%) patients with Type 2 diabetes demonstrated clinical recovery, 2346 (25.01%) prominent effect, 3835 (40.88%) some effect, and 1407 (15.00%) no effect. Overall totals were 1,878 (17.69%), 2,452 (23.09%), 3,979 (37.47%) and 2,309 (21.75%) respectively.²

Effect of Yu Xiao San 8805 on the Treatment of Hyperglycemia Using a Streptozotocin-Induced Insulin Resistant Diabetic Rat Model

In a placebo controlled experiment on the effect of Yu Xiao San 8805 on the treatment of hyperglycemia using a streptozotocin-induced insulin resistant diabetic rat model with the medical school of a university in the United States³ in 1994, about 100 rats were introduced and were divided into three groups – placebo, Yu Xiao San 8805, and a western drug “Metformin”. Dr. Ida Chen, director of General Clinical Research Core Laboratory and senior research scientist of Stanford University School of Medicine, stated that “Yu Xiao San 8805 has shown statistically significant effect on the increase in triglycerides (TG) in these streptozotocin-induced insulin resistant diabetic rats. Specifically, plasma TG concentration tends to increase in diabetic rats (and in diabetic patients); both Metformin and Yu Xiao San 8805 appeared to have a ‘controlling’ effect – i.e. they alleviated the increment of TG occurring in these rats.”⁴

Pancreas Islet Cells Stimulation by *Euonymus alatus*

Scientists from Japan have tested that *Euonymus alata sieb* has a blood sugar lowering action. The administration from the sodium oxalacetate, the effective component of *Euonymus alata sieb* brought about lowering of the blood sugar level in normal and alloxan diabetic animals. The same drug was given to diabetic patients, and it found effective in all of 10 of Type I and in 6 of 11 of Type II diabetics. It was also found that long-term administration of sodium oxalacetate induced hyperplasia and proliferation of the islet cells of the pancreas in rats, but no mentionable changes were found in other organs.⁵

The findings suggest that the active component of *Euonymus alata sieb* stimulates the islet cells, regulates the abnormal metabolic process, and enhances the secretion of

² Ibid.

³ Because of a Non-Disclosure Agreement signed before the experiment, the name of the university cannot be released publicly.

⁴ Chen, Ida, Ph.D. In a letter to Beijing Health Bureau regarding the effect of Yu Xiao San 8805 on the treatment of hyperglycemia using a Streptozotocin-induced insulin resistant diabetic rat model, dated June 25, 1994.

⁵ Chemistry Abstract. 70:18809a: Antidiabetic effect of sodium oxalacetate. Yoshikawa, Kiyohiko. Iwaki Kyoritsu Hosp., Iwaki, Japan. Tohoku Journal of Experimental Medicine (1968), 96 127-41.

insulin, and thereby controls the diabetic condition.⁶

Hypoglycemic Effects of Yu Xiao San 8805's Other Selected Ingredients

Yu Xiao San 8805 is composed of the following ingredients: *Euonymus alatus*, *Cortex Lycii Radicis*, *Arctium Lappa L.*, *Platycodon Grandiflorum*, *Litchi Chinensis*, *Curcuma longa*, *Panax quinquefolium L.*

Euonymus Alatus

In an experiment with normal mice and Alloxan induced diabetic mice, *Euonymus Alatus* showed hypoglycemic effects. The fasting serum glucose level in diabetic mice was reduced significantly, but similar effect on fasting serum glucose level was not produced in normal mice.⁷

Cortex Lycii Radicis

It is reported that soluble molecules of *Cortex Lycii Radicis* had hypoglycemic effects on rats.⁸

Arctium Lappa L.

Animal data: Streptozotocin-induced diabetic mice given burdock experienced aggravation of hyperglycemia⁹. However, studies in non-diabetic rats indicate some hypoglycemic effects¹⁰.

Human data: Reports from the 1930's stated that as the amount of burdock in the diet of diabetics increased, blood sugar levels and insulin requirements decreased¹¹.

Platycodon Grandiflorum

The effect of *Platycodon grandiflorum* on the improvement of insulin resistance and lipid

⁶ Ibid. Pg. 136.

⁷ Lang SM, Zhu DN, Yu BY, Zhao JL, Wang QJ, Hypoglycemic Effects of Extracts and Constituents from *Euonymus Alatus*. *Journal of China Pharmaceutical University*, 2003, 34(2): 128-131

⁸ Zhou J, Qiao W, Zhang Y, Zhao B, Screening on effective composition of *Cortex Lycii Radicis* (CLR) in alloxan diabetic mice. *Journal of Chinese Traditional Patent Medicine*, September, 2002.

⁹ Swanston-Flatt SK, Day C, Flatt PR, Gould BJ, Bailey CJ. Glycaemic effects of traditional European plant treatments for diabetes. Studies in normal and streptozotocin diabetic mice. *Diabetes Research* 1989; 10:69-73.

¹⁰ Lapinina L, Sisoeva T. Investigation of some plants to determine their sugar lowering action. *Farmatsevt* 1964; 19:52-8.

¹¹ Silver AA, Krantz JC, Jr. The Effect of the Ingestion of Burdock Root on Normal and Diabetic Individuals;a Preliminary Report. *Annals of Internal Medicine* 1931; 5:274-84.

profile was investigated in lean (Fa/-) and obese (fa/fa) Zucker rats, a model for noninsulin dependent diabetes mellitus. Dietary Platycodon grandiflorum feeding for 4 weeks resulted in a significant decrease in the concentration of plasma triglyceride in both lean and obese Zucker rats. Furthermore, dietary Platycodon grandiflorum markedly decreased both plasma cholesterol and fasting plasma insulin levels, and significantly decreased the postprandial glucose level at 30 min during oral glucose tolerance test in obese Zucker rats. Although there was no statistical significance, the crude glucose transporter 4 protein level of obese rats fed Platycodon grandiflorum tended to increase when compared with that of obese control rats. Therefore, the present results suggested that Platycodon grandiflorum may be useful in prevention and improvement of metabolic disorders characterized by hyperinsulinemia states such as noninsulin dependent diabetes mellitus, syndrome X, and coronary artery disease.¹²

Curcuma longa (Turmeric)

In a research study of the effect of turmeric(Curcuma longa) and its active principle, curcumin, on diabetes mellitus in an Alloxan induced diabetic rat model. Administration of turmeric or curcumin to diabetic rats reduced the blood sugar, Hb and glycosylated hemoglobin levels significantly. Turmeric and curcumin supplementation also reduced the oxidative stress encountered by the diabetic rats. This was demonstrated by the lower levels of TBARS (thiobarbituric acid reactive substances), which may have been due to the decreased influx of glucose into the polyol pathway leading to an increased NADPH/NADP ratio and elevated activity of the potent antioxidant enzyme GPx. Moreover, the activity of SDH (sorbitol dehydrogenase), which catalyzes the conversion of sorbitol to fructose, was lowered significantly on treatment with turmeric or curcumin.¹³

Panax quinquefolium L. (American Ginseng)

In a double blind, randomized, placebo-controlled preliminary short-term clinical study to examine the effects of postprandial glycemia in humans, American ginseng (Panax quinquefolius L) Ginseng attenuated postprandial glycemia in both diabetic and nondiabetic subjects. No differences were found in postprandial glycemia between placebo and ginseng when administered together with the glucose challenge to non-diabetic subjects. When ginseng was taken 40 minutes before the glucose challenge, significant reductions were observed (P<.05). In subjects with type 2 diabetes mellitus, the same was true whether capsules were taken before or together with the glucose challenge (P<.05). Reductions in area under the glycemic curve were 18%+/-31% for nondiabetic subjects

¹² Kim K, Seo E, Lee Y, Lee T, Cho Y, Ezaki O, Kim C., Effect of Dietary Platycodon Grandiflorum on the Improvement of Insulin Resistance in Obese Zucker Rats, *The Journal of Nutritional Biochemistry*, Volume 11, Issue 9 , September 2000, Pages 420-424

¹³ Arun N, Nalini N. Efficacy of turmeric on blood sugar and polyol pathway in diabetic albino rats. *Plant Foods Hum Nutr.* 2002 Winter;57(1):41-52.

and 19+/-22% and 22+/-17% for subjects with type 2 diabetes mellitus administered before or together with the glucose challenge, respectively.¹⁴

Conclusion

Yu Xiao San 8805, composed of material medica of Traditional Chinese Medicine has been used since 1988 as a Traditional Chinese Medicine for Type I and Type II diabetic patients in China Beijing Chaoyang District Red Cross Hospital (presently Beijing Anyuan Hospital) as well as other state hospitals in China. Clinical study in 1992 of 10618 cases, and an animal study in 1994 suggested that Yu Xiao San 8805 lowered blood sugar levels and had a controlling effect on triglycerides (TG) levels, respectively. Studies of ingredients of Yu Xiao San 8805 also suggested various hypoglycemic effects. Further studies are needed to investigate the mechanisms of Yu Xiao San 8805's functions in human body.

¹⁴ Vuksan V, Sievenpiper JL, Koo VY, Francis T, Beljan-Zdravkovic U, Xu Z, Vidgen E. American ginseng (*Panax quinquefolius* L) reduces postprandial glycemia in nondiabetic subjects and subjects with type 2 diabetes mellitus. *Archives of Internal Medicine*, 2000 Apr 10;160(7):1009-13.