

# MODERN MEDICINE AND TRADITIONAL CHINESE MEDICINE

# DIABETES MELLITUS

## (PART THREE)

by Clinton J. Choate

According to TCM, diabetes mellitus is classified as upper, middle or lower xiao-ke (wasting and thirsting syndrome) and is generally characterised by thirst, hunger, frequent urination and wasting (*see footnote*). Cloudy urine and sugar in the urine may also accompany these symptoms, each of which is said to have a predominant symptom: excessive thirst in the upper jiao (Lung), excessive appetite in the middle jiao (Stomach) and excessive urination in the lower jiao (Kidney). In reality there is usually a mixture of all the symptoms, although one often predominates slightly. By analysis of the symptoms, one should be able to determine which organ, whether the Lung, Stomach or Kidney is most yin deficient and therefore have a focus for treatment.

- Upper xiao-ke syndrome is characterised by Lung heat drying up body fluids leading to great thirst, restlessness, dry cough, dry skin, hoarseness, dry red tongue with or without cracks, a thin yellow tongue coating, and a forceful rapid pulse especially at the cun (distal) position.

- Middle xiao-ke syndrome is characterised by Stomach fire leading to excessive appetite and constant hunger, desire to drink cold liquids, burning sensation in the epigastrium, constipation, a red tongue with a thick yellow coating, and a slippery-forceful-rapid pulse.

- Lower xiao-ke syndrome is characterised by Kidney yin deficiency where there is excessive urination (clear or turbid), dry mouth at night, night sweating, sore back and aching bones, red-peeled tongue, and a deep-thready-rapid pulse.

- Lower xiao-ke syndrome with deficiency of both Kidney yin and yang (with the latter more pronounced) is charac-

terised by frequent urination of turbid urine especially at night, soreness and weakness of the lower back and knees, aversion to cold, lassitude, impotence, a pale red tongue with teethmarks and a white tongue coating, and a deep-thready-weak pulse.

Xiao-ke is attributed to three main factors: improper diet, emotional disturbance, and a constitution that is yin deficient<sup>1</sup>:

- Improper diet refers to irregular eating and drinking habits which damage the transporting and transforming functions of the Spleen and Stomach. The accumulated food in turn generates internal heat that consumes the fluids, thus bringing on wasting and thirsting.

- Prolonged emotional disturbance contributes to wasting and thirsting by hindering the flow of qi. Over-thinking damages the Spleen. Anger, resentment and frustration lead to constrained Liver qi which transforms into heat and fire and consumes the yin of the Lung and Stomach. Excessive worry damages the Kidneys and weakens the qi.

- When an individual is constitutionally yin deficient, factors such as prolonged stress or illness, overwork or excessive sexual activity can consume the essence. The result is Kidney yin deficiency that can be mixed with Lung and Stomach yin deficiency symptoms as well as with Kidney yang deficiency.

### *Herbal medicine treatment*

While acupuncture is a distinctive feature of traditional Chinese medicine, China's herbal medicine has many parallels to, and is a part of the general quest for effective medicines to treat illness. Our ancestors recognised their dependence upon nature in both health and sickness. Led by instinct, taste and experience, they used plants, animal parts and minerals that did not belong to their usual diet. Until well into the 20th century, much of the pharmacopoeia of scientific medicine was derived from just this type of herbal lore. Today in the United States, about one quarter of the prescriptions dispensed by pharmacies contain at least one active ingredient derived from plant material.

The 20th century has also seen a revival of more natural medicine as an outcome of increasing disenchantment with conventional medicine. By utilising natural substances together in their whole form in accurate formulations, effec-

*Footnote* Xiao-ke syndrome correlates closely with diabetes mellitus in most but not all cases.

#### *Similarities*

- Polyuria (excessive urination), polydipsia (excessive thirst), polyphagia (excessive hunger), weight loss.

#### *Differences*

- Increase in blood glucose level in diabetes mellitus, which is not necessarily seen in xiao-ke.

- Various complications associated with diabetes mellitus such as visual disturbances, impotence, infection and neuropathies are not necessarily seen in xiao-ke.

- Many conditions can cause polyuria or polydipsia in xiao-ke such as fever, dehydration and Kidney disease that are not necessarily seen in diabetes mellitus.

tiveness will be maximised and side effects minimised. This is contrary to conventional medicine that extracts or synthesises active chemicals that often, over time, produce drastic side effects due to their partiality.

The following section lists the herbs and herbal formulations that, through time-tested usage and modern pharmacological research have demonstrated their effectiveness in treating xiao-ke. Two of the more frequent formulas used for this purpose in China and Japan today were first described in the book *Jin Gui Yao Lue*, written around 200 CE. One is Ba Wei Di Huang Tang (Eight-Ingredient Pill with Rehmannia) which was originally prescribed for persons showing weakness, fatigue and copious urination soon after drinking water. In some cases, this may have been diabetes as we know it today. The other is Bai Hu Jia Ren Shen Tang (White Tiger Plus Ginseng Decoction), which was prescribed for severe thirst and fatigue. This formula, considered ideal for diabetes of recent onset, is used more frequently for this today in Japan than in China<sup>2</sup>.

### 1. Representative herbs and formulas for treating according to the three jiao differentiation

#### Upper jiao

Excessive thirst predominant (Lung yin deficiency).

*Treatment Principle:* clear heat and moisten the Lung.

##### Single Herbs

Xi Yang Shen (Radix Panacis Quinquefolii)  
Zhi Mu (Radix Anemarrhenae Asphodeloidis)  
Bai He (Bulbus Lilii)  
Sha Shen (Radix Glehniae Littoralis)  
Wu Mei (Fructus Pruni Mume)  
Mai Men Dong (Tuber Ophiopogonis Japonici)  
Ge Gen (Radix Puerariae)  
Sheng Di Huang (Radix Rehmanniae Glutinosae)  
Huang Qin (Radix Scutellariae Baicalensis)  
Tian Hua Fen (Radix Trichosanthis)

##### Formulas

1. **Bai Hu Jia Ren Shen Tang** (White Tiger Plus Ginseng Decoction): Shi Gao (Gypsum), Zhi Mu (Radix Anemarrhenae Asphodeloidis), Zhi Gan Cao (Radix Glycyrrhizae Uralensis), Geng Mi (Semen Oryzae).

*Action:* Tonifies qi, clears qi-level heat, drains Stomach fire, generates fluids, and alleviates thirst.

##### Modifications

- substitute Xi Yang Shen (Radix Panacis Quinquefolii) for Ren Shen (Radix Ginseng), and omit Geng Mi (Semen Oryzae).
- combine with Tian Hua Fen (Radix Trichosanthis), Lu Gen (Rhizoma Phragmitis Communis) and Mai Men Dong (Tuber Ophiopogonis Japonici).

2. **Er Dong Tang** (Asparagus & Ophiopogon Combination): Tian Men Dong (Tuber Asparagi Cochinchinensis), Mai Men Dong (Tuber Ophiopogonis Japonici), Tian Hua Fen (Radix Trichosanthis), Zhe Bei Mu (Bulbus Fritillariae Thunbergii), Huang Qin (Radix Scutellariae Baicalensis),

Gan Cao (Radix Glycyrrhizae Uralensis), Ren Shen (Radix Ginseng) and He Ye (Folium Nelumbinis Nuciferae)<sup>3</sup>.

*Action:* Nourishes yin, generates fluids, clears deficient heat.

3. **Mai Men Dong Yin Zu** (Ophiopogon and Trichosanthis Combination): Mai Men Dong (Tuber Ophiopogonis Japonici), Zhi Mu (Radix Anemarrhenae Asphodeloidis), Fu Ling (Sclerotium Poriae Cocos), Zhu Ru (Caulis Bambusae in Taeniis), Xi Yang Shen (Radix Panacis Quinquefolii), Ge Gen (Radix Puerariae), Wu Wei Zi (Fructus Schisandrae Chinensis), Tian Hua Fen (Radix Trichosanthis), Sheng Di Huang (Radix Rehmanniae Glutinosae), Gan Cao (Radix Glycyrrhizae Uralensis)<sup>4</sup>.

*Action:* Nourishes yin, clears Lung heat, relieves coughing.

#### Middle jiao

Excessive hunger predominant (Stomach yin deficiency).

*Treatment Principle:* clear Stomach heat and promote fluids.

##### Single Herbs

Zhi Mu (Radix Anemarrhenae Asphodeloidis)  
Huang Lian (Rhizoma Coptidis)  
Shan Zhi Zi (Fructus Gardeniae Jasminoidis)  
Sheng Shi Gao (Gypsum)  
Huang Jing (Rhizoma Polygonati)  
Shu Di Huang (Radix Rehmanniae Glutinosae Conquिताe)  
Mai Men Dong (Tuber Ophiopogonis Japonici)

##### Formulas

1. **Yu Nu Jian** (Jade Woman Decoction): Shi Gao (Gypsum), Shu Di Huang (Radix Rehmanniae Glutinosae Conquिताe), Zhi Mu (Radix Anemarrhenae Asphodeloidis), Mai Men Dong (Tuber Ophiopogonis Japonici), Niu Xi (Radix Achyranthis Bidentatae).

*Actions:* Eliminates intense heat or fire from the Stomach; to replenish the yin.

2. **Zheng Yi Cheng Qi Tang** (Increase the Fluid and Order the Qi Decoction): Da Huang (Rhizoma Rhei), Mang Xiao (Mirabilitum), Xuan Shen (Radix Scrophulariae Ningpoensis), Mai Men Dong (Tuber Ophiopogonis Japonici) and Sheng Di Huang (Radix Rehmanniae Glutinosae)<sup>5</sup>.

*Actions:* Enriches yin, generates fluids, drains heat and unblocks the bowels

#### Lower jiao

Excessive urination predominant

##### 1. Kidney yin deficiency

*Treatment principle:* Nourish and reinforce Kidney yin, eliminate deficiency heat.

##### Single Herbs

Ze Xie (Rhizoma Alismatis Plantago-aquaticae)  
Fu Ling (Sclerotium Poriae Cocos)  
Shan Zhu Yu (Fructus Corni Officinalis)  
Shan Yao (Radix Dioscoreae Oppositae)  
Huang Bai (Cortex Phellodendri)  
Bie Jia (Carapax Amydae Sinensis)  
Huang Jing (Rhizoma Polygonati)  
Shu Di Huang (Radix Rehmanniae Glutinosae Conquिताe)

*Formulas*

1. *Liu Wei Di Huang Wan* (Six-Ingredient Pill with Rehmannia).
2. *Zuo Gui Wan* (Restore the [Left] Kidney Pill).
3. *Da Bu Yin Wan* (Great Tonify the Yin Pill)<sup>6</sup>.
4. *Zhi Bai Di Huang Wan* (Anemarrhena, Phellodendron, and Rehmannia Pill). Quells ascending yang in the mingmen with such symptoms as frequent small amounts of concentrated dark urine.

**2. Kidney yang deficiency**

*Treatment principle:* Tonify Kidney yang; astringe urine.

*Single Herbs*

Fu Zi (Radix Aconiti Carmichaeli Praeparatae)  
 Ze Xie (Rhizoma Alismatis Plantago-aquaticae)  
 Rou Gui (Cortex Cinnamomi Cassiae)  
 Fu Ling (Sclerotium Poriae Cocos)  
 Shan Zhu Yu (Fructus Corni Officinalis)  
 Shan Yao (Radix Dioscoreae Oppositae)  
 Mu Dan Pi (Cortex Moutan Radicis)  
 Lian Xu (Stamen Nelumbinis Nuciferae)  
 Lian Zi (Semen Nelumbinis Nuciferae)  
 Shu Di Huang (Radix Rehmanniae Glutinosae Conquिताe)

*Formulas*

1. *You Gui Wan* (Restore the [Right] Kidney Pill).
  2. *Jin Gui Shen Qi Wan* (Kidney Qi Pill from the Golden Cabinet).
  3. *Qi Wei Du Qi Wan* (Seven Herbs to Guide the Qi Pills)<sup>7</sup>: Shu Di Huang (Radix Rehmanniae Glutinosae Conquिताe), Shan Zhu Yu (Fructus Corni Officinalis), Shan Yao (Radix Dioscoreae Oppositae), Wu Wei Zi (Fructus Schisandrae Chinensis), Mu Dan Pi (Cortex Moutan Radicis), Fu Ling (Sclerotium Poriae Cocos), Ze Xie (Rhizoma Alismatis Plantago-aquaticae) plus
  4. *Suo Quan Wan* (Shut the Sluice Pill).
- All replenish the yang [vital function] of the Kidney to warm the lower part of the body and curb excessive urination. Formula 4 should be combined with either 1, 2 or 3 to further help the Kidney reassert its control over the functions of the Bladder to reduce frequency of urination.

**2. General Treatment with Modifications<sup>8</sup>**

The clinical presentation of patients with diabetes can be summarised as yin deficiency with dryness and heat. As an empirical treatment *Liu Wei Di Huang Wan* (Six-Ingredient Pill with Rehmannia) together with *Yu Nu Jian* (Jade Woman Decoction) can be used.

*Modifications*

- To address high cholesterol add Shan Zha (Fructus Crataegi), He Shou Wu (Radix Polygoni Multiflori) and Sang Ji Sheng (Ramus Loranthis seu Visci).
- To address coronary artery disease add Gua Lou Pi (Pericarpium Trichosanthis), Dan Shen (Radix Salviae Miltiorrhizae) and Jiang Xiang (Lignum Dalbergiae Odoriferae).

**3. Modern Research Formula: "EquilibriumTM"<sup>9</sup>**

EquilibriumTM is a herbal formula developed jointly by professor Xiao-Ping Zhang of Anhui Hospital of Traditional Chinese Medicine and Lotus Herbs Inc. It is an empirical formula designed to treat patients with diabetes mellitus. It has been used successfully for over 30 years in China and has helped several thousands of patients with diabetes mellitus.

*Western Therapeutic Action*

- Lowers blood glucose
- Lowers blood cholesterol
- Improves blood circulation to the coronary arteries and peripheral parts of the body

*Ingredients*

Xi Yang Shen (Radix Panacis Quinquifolii)  
 Shi Gao (Gypsum)  
 Zhi Mu (Radix Anemarrhenae Asphodeloidis)  
 Xuan Shen (Radix Scrophulariae Ningpoensis)  
 Huang Qi (Radix Astragali)  
 Shan Yao (Radix Dioscoreae Oppositae)  
 Cang Zhu (Rhizoma Atractylodis)  
 Bai Zhu (Rhizoma Atractylodis Macrocephalae)  
 Dan Shen (Radix Salviae Miltiorrhizae)  
 Hong Hua (Flos Carthami Tinctorii)  
 Lian Zi Xin (Plumula Nelumbinis Nuciferae)  
 Lian Xu (Nelumbinis Nuciferae Stamen)

This formula addresses both the cause of, and the symptoms that arise from, yin deficiency with dryness and heat.

*Explanation*

Xi Yang Shen greatly replenishes the vital essence of the body and promotes the secretion of body fluids. Shi Gao and Zhi Mu are a commonly used pair to treat heat in the middle jiao. Together they sedate Stomach fire and relieve thirst by generating fluids. Xuan Shen enters the Lung, Stomach and Kidneys to replenish the vital essence and simultaneously clear heat. Huang Qi and Fu Ling strengthen the Spleen and enhance its function of transportation and transformation. Bai Zhu and Cang Zhu strengthen the Spleen and dry up dampness. Dan Shen and Hong Hua activate blood circulation and enhance the overall effectiveness of the herbs. Activation of blood circulation will also reduce the risk of atherosclerosis by preventing build-up of cholesterol on the inner walls of the blood vessels. Lastly Lian Zi Xin and Lian Xu tonify the Kidneys and control frequent urination.

*Formula explanation according to modern research*

Diabetes mellitus is defined simply as a rise in blood glucose level. Its clinical manifestations, however, are much more complicated than its definition. Patients with diabetes mellitus are frequently plagued by various complications such as visual disturbance, and increase in blood cholesterol and lipid levels.

Treatment of diabetes mellitus therefore, must focus on treating the cause and the symptoms simultaneously. Xi Yang Shen is most commonly used for its effect to tonify qi. In terms of western physiology, tonification of qi enhances

the ability of the cells to utilise glucose as energy and prevent synthesis of glucose. Clinically, Xi Yang Shen has demonstrated its effectiveness in lowering blood glucose and cholesterol levels<sup>10</sup>. Shi Gao and Zhi Mu also lower blood glucose levels and relieve indigestion, whilst Xuan Shen and Cang Zhu lower blood glucose levels and reduce build-up of cholesterol within the blood vessels. The combination of these herbs has excellent hypoglycaemic effects and reduces the risk of long-term atherosclerosis<sup>11</sup>. Dan Shen and Hong Hua are used to improve the blood circulation and minimise long-term complications. Studies have demonstrated that Dan Shen improves micro-circulation to the peripheral parts of the body, increases blood flow to coronary arteries, and lowers both blood cholesterol and blood sugar.

#### 4. Individual Herb Properties

*Ze Xie* (Rhizoma Alismatis Plantago-aquaticae)

Sweet, bland, cold. Enters the Kidneys and Bladder. Promotes urination, leaches out dampness without injuring yin, and lowers blood pressure and blood glucose. In classical texts *Ze Xie* is recommended as an adjunctive herb for wasting and thirsting syndrome.

*Zhi Mu* (Radix Anemarrhenae Asphodeloidis)

Bitter, cold. Enters the Lung, Kidneys and Stomach. Clears heat, quells fire and generates fluids. Combine with Tian Hua Fen (Radix Trichosanthis).

*Tian Men Dong* (Tuber Asparagi Cochinchinensis)

Sweet, bitter, cold. Enters the Lung and Kidneys. Moistens the Lung and nourishes the Kidneys; used for patterns of deficiency of Lung and Kidney yin.

*Huang Qi* (Radix Astragali)

Sweet, neutral. Enters the Spleen, Lung and Heart. Strengthens the Spleen and benefits qi. Used for deficient Spleen and Stomach with fatigue and lack of appetite. Tonifies the Lung and stabilises the exterior. Combine with Shan Yao and Sheng Di Huang (Radix Rehmanniae Glutinosae) for wasting and thirsting.

*Cang Zhu* (Rhizoma Atractylodis)

Acrid, bitter, warm, aromatic. Enters the Spleen and Stomach. Dries dampness and strengthens the Spleen. Initially raises blood glucose then significantly lowers it.

*Bai Zhu* (Rhizoma Atractylodis Macrocephalae)

Bitter, sweet, warm. Enters the Spleen and Stomach. Tonifies the Spleen and benefits qi, dries dampness. Used for such symptoms as fatigue, poor appetite, nausea. Increases assimilation of glucose and lowers plasma glucose levels.

*Dang Shen* (Radix Codonopsis Pilosulae)

Sweet, neutral. Enters the Spleen and Lung. Strengthens qi, nourishes fluids, tonifies the middle jiao. In general the functions of this herb are analogous to Ren Shen (Radix Ginseng) although not as strong. Clinically used to tonify the qi of the Spleen and Lung. *Dang Shen* has a vasodilatory effect on terminal blood vessels.

*Shi Hu* (Herba Dendrobii)

Sweet, slightly salty, bland, cold. Enters the Stomach, Lung

and Kidneys. Nourishes deficient Stomach yin. Combine with Mai Men Dong (Tuber Ophiopogonis Japonici) and Tian Hua Fen (Radix Trichosanthis) for abdominal discomfort associated with Stomach yin deficiency.

*Shan Yao* (Radix Dioscoreae Oppositae)

Sweet, neutral. Enters the Spleen, Lung and Kidneys. Benefits the Lung and nourishes the Kidneys (yin and yang). Combine with Tian Hua Fen (Radix Trichosanthis) for irritability and thirst associated with injured fluids.

*Ren Shen* (Radix Ginseng)

Sweet, slightly bitter, slightly warm. Benefits yin and generates fluids. Tonifies the Lung and benefits qi; strengthens the Spleen and Stomach; benefits the Heart and calms the spirit. Some patients can lower their insulin requirement by taking this herb.

*Gan Cao* (Radix Glycyrrhizae Uralensis)

Sweet, neutral (raw); sweet, warm (honey-baked). Enters all twelve primary channels (principally the Stomach and Spleen). Tonifies the Spleen and benefits qi: commonly used for Spleen deficiency patterns.

*Gou Qi Zi* (Fructus Lycii Chinensis)

Sweet, neutral. Enters the Liver and Kidneys. Nourishes and tonifies the Liver and Kidneys; used for yin and blood deficiency.

*Di Gu Pi* (Cortex Lycii Chinensis Radicis)

Sweet, cold. Enters the Lung, Kidneys and Liver; quells fire from yin deficiency, alleviates cough from Lung heat, lowers blood pressure. First slightly raises serum glucose then steadily lowers it; does not counteract the hyperglycaemic effect of adrenaline.

*Sang Shen Zi* (Fructus Mori Albae)

Sweet, cool. Enters the Liver and Kidneys. Nourishes yin and blood. Combine with Ji Xue Teng (Radix et Caulis Jixueteng) for yin deficiency.

*Mai Men Dong* (Tuber Ophiopogonis Japonici)

Sweet, slightly bitter, slightly cold. Enters the Lung, Stomach and Heart. Nourishes yin and clears heat. Experimentally has lowered serum glucose, speeded recovery of Islets of Langerhans, and increased glycogen storage levels in rabbits with artificially induced diabetes mellitus.

*Huang Bai* (Cortex Phellodendri)

Bitter, cold. Enters the Kidneys, Bladder and Large Intestine. Eliminates heat and dampness, sedates fire and detoxifies, reduces deficiency heat. Increases pancreatic secretions, lowers blood pressure and blood sugar.

*Huang Jing* (Rhizoma Polygonati)

Sweet, neutral. Enters the Spleen and Lung. Tonifies the Spleen; used for deficiency of Spleen or Stomach and debility after prolonged illness. Tonifies essence after a chronic wasting disease. Combine with Shan Yao (Radix Dioscoreae Oppositae) and Huang Qi (Radix Astragali).

*Yu Zhu* (Rhizoma Polygonati Odorati)

Sweet, slightly cold. Enters the Lung and Stomach. Nourishes yin and moistens dryness. Used for Lung and Stomach dry heat or deficient yin patterns with cough, dry throat, irritability, thirst and intense hunger, and constipation.

*He Shou Wu* (Radix Polygoni Multiflori)

Bitter, sweet, astringent, slightly warm. Enters the Liver and Kidneys. Tonifies the Liver and Kidneys, nourishes blood, benefits the essence; used for deficient yin or blood patterns. Decreases absorption of cholesterol; initially increases serum glucose, then lowers it.

*Fu Ling* (Sclerotium Poriae Cocos)

Sweet, bland, neutral. Enters the Heart, Spleen and Lung. Strengthens the Spleen and harmonises the middle jiao; transforms phlegm and eliminates dampness.

*Wu Mei* (Fructus Pruni Mume)

Sour, warm. Enters the Liver, Spleen, Lung and Large Intestine. Generates fluids, alleviates thirst: used for thirst from deficiency heat or deficient qi and yin. Combine with Tian Hua Fen (Radix Trichosanthis) for thirst and irritability from injured fluids.

*Ge Gen* (Radix Puerariae)

Sweet, acrid, cool. Enters the Spleen and Stomach. Nourishes fluids and alleviates thirst, especially from Stomach heat. Combine with Tian Hua Fen (Radix Trichosanthis) and Mai Men Dong (Tuber Ophiopogonis Japonici) for thirst.

*Xi Yang Shen* (Radix Panacis Quinquefolii)

Sweet, bitter, cool. Enters the Lung, Stomach and Kidneys. Benefits qi, generates fluids and nourishes yin; especially good for deficient yin with heat signs such as weakness, irritability and thirst. Combine with Shi Gao (Gypsum) and Zhi Mu (Radix Anemarrhenae Asphodeloidis) for thirst where fluids are injured.

*Shu Di Huang* (Radix Rehmanniae Glutinosae Conquatae)

Sweet, slightly warm. Enters the Liver, Kidneys and Heart. Nourishes the yin especially of the Kidneys. Lowers blood pressure and serum cholesterol.

*Sheng Di Huang* (Radix Rehmanniae Glutinosae)

Sweet, bitter, cold. Enters the Liver, Kidneys and Heart. Clears heat, cools blood, nourishes yin and blood and generates fluids. Used for deficient yin patterns with heat signs and injury to body fluids. Lowers serum glucose levels. Combine with Xuan Shen (Radix Scrophulariae Ningpoensis) for excessive thirst, irritability and a scarlet tongue.

*Wu Wei Zi* (Fructus Schisandrae Chinensis)

Sour, warm. Enters the Lung and Kidneys. Restrains essence. Used for deficient Lung and Kidney patterns. Calms the spirit. Recent reports state this herb increases usage of both liver glycogen stores and serum glucose. Combine with Dang Shen (Radix Codonopsis Pilosulae) and Mai Men Dong (Tuber Ophiopogonis Japonici) for symptoms associated with exhaustion from qi and yin.

*Xuan Shen* (Radix Scrophulariae Ningpoensis)

Salty, slightly bitter, cold. Enters the Lung, Stomach and Kidneys. Nourishes yin, clears heat. Lowers blood sugar, dilates blood vessels.

*Tian Hua Fen* (Radix Trichosanthis)

Bitter, slightly sweet, sour, cool. Enters the Lung and Stomach. Quells heat, promotes fluids. Combine with Sha Shen

(Radix Glehniae Littoralis), Mai Men Dong (Tuber Ophiopogonis Japonici) and Sheng Di Huang (Radix Rehmanniae Glutinosae) for injury to yin from Stomach heat.

**5. Review of herbs with hypoglycaemic effects<sup>12</sup>**

Wu Jia Pi (Cortex Acanthopanax Radicis)

Cang Zhu (Rhizoma Atractylodis)

Bai Zhu (Rhizoma Atractylodis Macrocephalae)

Ze Xie (Rhizoma Alismatis Plantago-aquaticae)

Ren Shen (Radix Ginseng)

Di Gu Pi (Cortex Lycii Chinensis Radicis)

Mai Men Dong (Tuber Ophiopogonis Japonici)

Huang Bai (Cortex Phellodendri)

He Shou Wu (Radix Polygoni Multiflori)

Huang Jing (Rhizoma Polygonati)

Sheng Di Huang (Radix Rehmanniae Glutinosae)

Shu Di Huang (Radix Rehmanniae Glutinosae Conquatae)

Xuan Shen (Radix Scrophulariae Ningpoensis)

**Herb pairs with hypoglycaemic effects<sup>13</sup>**

- Zhi Mu (Radix Anemarrhenae Asphodeloidis) and Shi Gao (Gypsum): best used when there is Stomach heat present.

- Xuan Shen (Radix Scrophulariae Ningpoensis) and Cang Zhu (Rhizoma Atractylodis): best used when there is yin deficiency with excessive damp present.

- Shan Yao (Radix Dioscoreae Oppositae) and Huang Qi (Radix Astragali): best used when Spleen deficiency symptoms are present. Do not use the honey-processed Mi Huang Qi.

**7. Example of a herbal prescription<sup>14</sup>**

*Basic formula*

Ren Shen (Radix Ginseng) 6-10g

Dang Shen (Radix Codonopsis Pilosulae) 30g

Sheng Shi Gao (Gypsum) 30g

Zhi Mu (Radix Anemarrhenae Asphodeloidis) 10g

Huang Lian (Rhizoma Coptidis) 10g

E Jiao (Gelatinum Asini) 10g

Bai Shao (Radix Paeoniae Lactiflorae) 18g

Tian Hua Fen (Radix Trichosanthis) 15-30g

Ge Gen (Radix Puerariae) 30g

Shan Yao (Radix Dioscoreae Oppositae) 15g

He Shou Wu (Radix Polygoni Multiflori) 30g

Dan Shen (Radix Salviae Miltiorrhizae) 15g

Chuan Xiong (Radix Ligustici Wallichii) 12g

Huang Jing (Rhizoma Polygonati) 15-30g

Mai Men Dong (Tuber Ophiopogonis Japonici) 15-30g

Tian Men Dong (Tuber Asparagi Cochinchinensis) 15g

Sheng Di Huang (Radix Rehmanniae Glutinosae) 15g

*Modifications*

- Upper jiao symptoms predominant: add Bai He (Bulbus Lilii) 10g, Wu Mei (Fructus Pruni Mume) 10g, Tian Hua Fen (Radix Trichosanthis) 30g, Sha Shen (Radix Glehniae Littoralis) 30g.

- Middle jiao symptoms predominant: add Shu Di Huang (Radix Rehmanniae Glutinosae Conquatae) 30g, Shi Gao

(Gypsum) 30g, Huang Jing (Rhizoma Polygonati) 15g.

- Lower jiao symptoms predominant: add Rou Gui (Cortex Cinnamomi Cassiae) 6g, Fu Zi (Radix Aconiti Carmichaeli Praeparatae) 6-10g, Hong Shen (Radix Ginseng) 15g.
- If thick greasy yellow tongue coating: add Cang Zhu (Rhizoma Atractylodis) 15g, Bai Zhu (Rhizoma Atractylodis Macrocephalae) 20g, Jin Qian Cao (Herba Jinqiancao) 30g.
- If loose stools or diarrhoea: add Yi Yi Ren (Semen Coicis Lachryma-jobi) 30g, Mu Xiang (Radix Saussureae seu Vladimiriae) 15g. Subtract: Sheng Di Huang (Radix Rehmanniae Glutinosae).
- If blood stagnation and pain: add Tao Ren (Semen Persicae) 10g, Hong Hua (Flos Carthami Tinctorii) 6g.

The above formula, with additions and subtractions, is provided only as a general guide since each patient's signs and symptoms must be considered when prescribing their own individualised formula. The formula represents a one-day's dose. Herbs are combined in a non-reactive, glass or ceramic cooking pot covered with water and brought to a boil. Reduce to simmer for 20-30 minutes with lid slightly ajar. Strain off liquid and repeat process a second time, simmering the herbs 30-40 minutes. Combined brewing should result in 3-4 cups of liquid. Drink warm or hot.

### 8. General patent formulas for diabetes

The traditional method of preparing Chinese medicine is to boil and simmer raw herbs in an earthenware pot in accordance with strict instructions. Preparation and actual consumption of the medicine can take one to three hours. To make it more convenient, and to help insure patient compliance, medicinal formulations are now prepared for use in more than 30 different intake forms. These include pills, powders, granules, tablets, capsules, gelatins, medicinal wines and waters, medicinal teas, oral liquids, syrups, sprays, concentrates, injections and plasters.

Following is a partial listing of Chinese patent formulations currently used for the treatment of diabetes and its complications. Inclusion does not imply endorsement by the author, rather they are offered for the reader's further investigation and study.

#### *Ci Wu Jia Pian*

A single herb (*Acanthopanax senticosus*) patent used to support endocrine gland functions in general and particularly in order to increase insulin production and to decrease blood sugar. A member of the Araliaceae family, and analogous to Siberian Ginseng (*Eleutherococcus senticosus*), this herb has been used for over 2000 years for its adaptogenic (normalising) and energising properties.

#### *Specific Juk Tsyn Wan*

Produces saliva, quenches thirst; relieves fever, alleviates mental uneasiness; vitalises blood activity, nourishes the Kidney; invigorates the nervous system and improves appetite. Kwangchow United Manufactory of Chinese Medicine, PRC

#### *Yuechung Pills, a.k.a. Yu Quan Wan [Jade Spring Pills]*

Nourishes yin, strengthens the Kidneys, Lung, and Spleen;

dispels phlegm-heat; relieves thirst; circulates fluid; regulates the appetite; calms the spirit. A classical formula for "sugar urine disease", used for both juvenile and insipid diabetes in mainland China. The United Pharmaceutical Manufactory, Sichuan, PRC.

#### *Xiaoke Wan, a.k.a. "Diabetes Pill"<sup>15</sup>*

Widely prescribed in Chinese hospitals and clinics today for reducing glucose levels and alleviating symptoms of diabetes and other related diseases. Xiaoke Wan has proven to be especially effective for treating mild and moderate cases of diabetes in which the pancreas is still partially functioning. The herbal components are Shu Di Huang (Radix Rehmanniae Glutinosae Conquatae), Huang Qi (Radix Astragali) and Tian Hua Fen (Radix Trichosanthis) which have the action of nourishing the Kidneys and yin, benefiting qi and promoting the production of fluids. In addition it also includes a small amount of the oral antidiabetic drug Glibenclamide. Zhong Yi Brand, Guangzhou Pharmaceutical Company Ltd., PRC. (see Appendix: Clinical Research).

#### *Yu Xiao San 8805<sup>16</sup>*

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 response. The main herb components are Ramulus Euonymi Alatae, Niu Bang Zi (Fructus Arctii Lappae), Wei Ling Xian (Radix Clemetidis Chinensis), Di Gu Pi (Cortex Lycii Chinensis Radicis), E Zhu (Rhizoma Curcumae Zedoariae), Jie Geng (Radix Platycodi Grandiflori), Li Zhi He (Semen Litchi Chinensis) and Ren Shen (Radix Ginseng). This patent is currently also being produced in the US and marketed as a health food. (see Appendix: Clinical Research).

#### *Sugar-Reducing and Pulse-Invigorating Capsule<sup>17</sup>*

Effective in replenishing qi, nourishing yin, activating blood, and resolving stagnation. It has been proven clinically effective in correcting abnormalities in blood rheology, improving fat metabolism, enhancing the function of the islets of Langerhans, lowering blood sugar and alleviating clinical symptoms of diabetes. The formulation, which includes such herbs as Huang Qi (Radix Astragali) and Sheng Di Huang (Radix Rehmanniae Glutinosae), is noted for its effectiveness against the chief vascular complications of diabetes by reducing myocardial anoxia, (oxygen deprivation of heart tissue), improving left heart function, stimulating blood circulation to the brain, resisting coagulation, resolving thrombosis, and dilating the arteries of the legs. It also has some proven benefit in early diabetic retinopathy and renal disease. (see Appendix: Clinical Research).

#### *Ji Wei Ling capsules, Zhong Ji Ling powders and others<sup>18</sup>*

A group of herbal preparations produced by the Special Department of Diabetes Medical Research, Xi Yuan Hospital to treat diabetic cardio-cerebral vascular disease and diabetic neuropathy. Statistics include 3,690 cases with complete

medical records that demonstrate an overall effective rate of 95.2%. Many patients were noted to have regained their health to a degree where they were able to discontinue western medicine and insulin, thereby greatly decreasing their chances of diabetic complications. (see Appendix: Clinical Research).

### *Appendix: Clinical Research*

Testing for Effectiveness of Commercially Available Patent Medicines

#### *Xiaoke Wan*

Indicated in cases of polydipsia, polyuria, polyphagia, emaciation, fatigue, sleeplessness, lumbago, and elevated sugar levels in blood and urine, Xiaoke Wan as a combination herbal and western drug (see footnote) treatment for diabetes, has been the subject of many studies to establish its level of effectiveness. In one recent study (1994) a control group of 22 patients were selected to take Xiaoke Wan as part of a one month clinical study in the treatment of diabetes by acupuncture. At the end of the trial period among the 22 control group participants, 12 cases were rated as effectively treated, 8 cases as markedly effective and 2 cases as ineffective. All but two of the patients showed decline in blood sugar and urinary sugar excretion and improvement in symptoms. More than one-third of the patients had marked improvement. Clearly none of these patients could be considered "cured" of diabetes, which would suggest sustained fasting blood-sugar levels below 100mg/dl, but as previous studies confirmed, Xiaoke Wan was demonstrated to be quite effective. "Markedly effective" was defined as having initial symptoms essentially disappear and their fasting blood-sugar levels drop to below 130mg/dl, and the 24-hour urine-sugar content was reduced by 30% or more compared to the beginning of treatment. For those deemed "effectively treated" symptoms were improved but not resolved, and fasting blood-sugar levels dropped to below 150mg/dl and the 24-hour urinary excretion declined by at least 10% from initial values. If these standards were not met the treatment was deemed ineffective.

#### *Yu Xiao San 8805*

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 China Beijing Chao Yang District Red Cross Hospital and from 48 comparable hospitals nationwide.

#### *Treatment Criteria*

- Clinical recovery: The preferred criterion: FPG (Fasting Plasma Glucose) <6.1 mmol/L (110 mg/dl), HbA1c <6.8%;

*Footnote* Contains glibenclamide, a.k.a., glipizide and glyburide. One of the more efficient oral antidiabetic drugs of the "second generation" of sulphonylureas, however certain precautions exist for pregnant women or persons with renal or hepatic insufficiency. More information on glibenclamide can be found at the Informed Drug Guide web site at: <http://www.informed.org/frames/glibfram-s.html>

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*

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.

#### *Two Case Reports*

- Mrs. W.

Age: 56; height: 5'6"; weight: 150 lbs.

1990.5: Tested blood glucose at 200mg/dl, diagnosed as Diabetes II, took oral hypoglycaemics two tablets twice a day.

1994.9.10: Began treatment with Yu Xiao San 8805 two tablets four times a day, and continued oral hypoglycaemics.

1994.9.25: FPG level at 140-160mg/dl.

1994.10.12: FPG was 112-140/dl. Reduced oral hypoglycaemics to one tablet.

1994.11.12: Stopped oral hypoglycaemics. Fasting blood glucose was 93-136mg/dl.

1994.12.12: FPG was 90-128mg/dl. Continued Yu Xiao San for three months for consolidation.

Up to 1995.8: Monthly monitored blood glucose level 100-110mg/dl.

- Mr. G.

Age: 44; height: 5'7"; weight: 152 lbs.

1990.6: Rapid weight loss, tested blood glucose at 405mg/dl, diagnosed as Diabetes I, hospitalised on insulin injection, 20 units once a day.

1992.8.20: FPG was 117mg/dl. Started Yu Xiao San 8805 two tablets four times a day and continued injection.

1992.9.5: FPG 115-120mg/dl.

1992.10.5: FPG 105-109mg/dl, lower blood sugar reaction. Reduced insulin 4 units.

1992.10.29: FPG 90-111mg/dl. Reduced insulin 4 units.

1992.11.20: FPG 95-115mg/dl. Reduced insulin 2 units.

1993.1.15: FPG 90-120mg/dl. Stopped injection and continued Yu Xiao San 8805 two tablets four times a day for three month consolidation.

Up to 1995.8: Maintained blood glucose level 90-140mg/dl after discontinuance of any medication.

Yu Xiao San 8805 was developed by Dr. Chong Lianjin, Director of The Red Cross Hospital in Beijing, as a herbal product to restore pancreatic function and to increase insulin beta cells. It has undergone experimental tests both in China and the United States with good results and has been

used by diabetics in over fifty countries worldwide. No adverse or allergic reactions have been reported from its use nor has damage to the liver, kidney or any other organs. It is currently used by the Asian Diabetes Association, Red Cross Hospital in Beijing and several State Hospitals in China as a medical treatment for Type II Diabetes. For a more complete description of Yu Xiao San together with numerous other case reports refer to the China Guide website at: <http://www.china-guide.com/health/diabetes.html>

#### *Sugar-Reducing and Pulse-Invigorating Capsule ("Jiang Tang Tong Mai Yin Jiao Nang")*

The following is excerpted from a study appearing in 1994 on the effectiveness of Sugar-Reducing and Pulse-Invigorating Capsule in treating vascular complications of diabetes. It was conducted at the Guang An Men Hospital, China Academy of Traditional Chinese Medicine, Beijing. The effect of the formula on the signs and symptoms, biochemistry, haemodynamics, and the fibrinolytic system were observed and the results compared with those in a 159 patient control group who did not receive the capsule. All patients under observation were non-insulin dependent diabetics with fasting blood sugar of between 150-240mg/dl, and had one of the following complications: vascular hypertension, coronary heart disease, cerebrovascular disease, vascular disease of the extremities, retinopathy, or renal disease. Blood stasis was diagnosed when there were two of the following symptoms and signs, or there was one symptom or sign along with one abnormal laboratory finding, or there were two or more abnormal laboratory findings. Symptoms and signs included cyanosis or ecchymosis over the face, lips or tongue, sublingual engorged veins, precordial (heart) pain, numbness or cold aching in the extremities with cyanosis of the toes, blurring of vision, dizziness and headache, amnesia or dementia, dysarthria (imperfect speech articulation due to damage to the peripheral nervous system) and hemiplegia, and a hesitant, slow pulse with missing beats, or a deep or very slow pulse. The abnormal laboratory findings included increased blood coagulability, abnormal blood rheology, decrease in fibrinolytic activity, increased platelet aggregation, and impediment to the microcirculation. The study group consisted of 625 diabetic patients most of which had been diagnosed as having both deficiency of qi and yin with concurrent blood stasis. Two control groups were used with the first taking dimicon 80mg 2-3 times a day and the other a tablet prepared by the Academy plus a Western oral hypoglycaemic agent. For purposes of the study a 3 month duration of treatment was established.

#### *Results Criteria*

- **Marked Improvement:** after 3 months of treatment, the signs and symptoms basically subsided, 5 items of the blood rheology and 2 items of the fibrinolytic system were improved, fasting blood sugar < 110mg/dl, urine sugar in 24 hrs < 5g, or blood sugar and urine sugar were lowered by 50% or more as compared with pre-treatment values.

- **Effective:** after 3 months of treatment, signs and symptoms were distinctly reduced, 4 or more items of the blood rheology and fibrinolytic system improved, fasting blood sugar < 150mg/dl, urine sugar dropped by 30% or more as compared with pre-treatment values.

- **Ineffective:** after 3 months of treatment, the above criteria of effectiveness were not met.

#### *Results*

After 3 months of treatment and monitoring, of 625 patients who took the *Sugar-Reducing and Pulse-Invigorating Capsule*, 95 (15.2%) experienced marked improvement, 388 (62.08%) experienced effective results, and 142 (22.72%) were ineffective. In the two control groups, results were: 1. of 57 cases, 6 (10.52%), 31 (54.39%) and 20 (35.09%); 2. of 102 cases, 10 (9.81%), 57 (55.88%) and 35 (34.31%).

An analysis of the difference in therapeutic efficacy among the various TCM diagnostic types showed that cases with deficiency of both qi and yin had a general efficacy of 81.89%, while those with i. predominance of yin deficiency and heat, and ii. deficiency of both yin and yang, were 63.38% and 63.03% respectively, indicating that the capsule was best suited for cases with deficiency of both qi and yin. As for the relationship between the course of treatment and its efficacy, it was observed that when the capsule was administered for 1-3 years or longer, there was a gradual increase in its effectiveness, showing the lasting and steady action of the capsule.

#### *Summary*

The authors report that vascular disease in diabetes and the symptom-complex of blood stasis in traditional Chinese medicine share the same pathological basis, namely impediment to circulation causing blood stagnation. The proportion of cases with vascular disease and blood stagnation within the diabetic population varies, with its distribution increasing in the order of i. yin deficiency with heat preponderance, ii. deficiency of both qi and yin, and iii. deficiency of both yin and yang. It was observed that the severity of the complications also increase in that order, indicating that both the modern medical classification of vascular disease and the TCM symptom complex of blood stasis followed rules of distribution common to both and had a common trend toward development.

Vascular disease and the symptom-complex of blood stasis are considered to be two different expressions of the same pathological change, the latter being the clinical manifestation of the former, and the former the pathologic basis of the latter, the two being reciprocally causative. Diagnosis of signs and symptoms indicate that deficiency of yin is the basis for diabetes, deficiency of both qi and yin is the basic diagnostic type of the disease, and blood stasis is its chief accompanying symptom complex. Therefore, replenishing qi, nourishing yin, and invigorating the blood are the main treatment principles for vascular disease in diabetes. Replenishing qi plays the leading role, nourishing yin the supportive role, and invigoration of blood the required role, the three working together to counteract the patho-



genic factors and reinforce the body resistance at the same time

In the 625 cases of diabetes the capsule was shown to correct abnormalities in the blood rheology, haematocrit, erythrocyte sedimentation rate, platelet aggregation, fibrinogen and fibrin decomposition products, improve lipid metabolism, increase the function of the islets of Langerhans cells, lower blood sugar and alleviate clinical symptoms. The total effectiveness reached 77.28%.

Clinical observation of the effect of the capsule on the chief vascular complications showed that it had the actions of nourishing yin and replenishing qi of the Heart, reducing myocardial ischaemia and anoxia, eliminating abnormalities in the ECG and improving functioning of the left heart. Brain CT proved that the drug had the actions of invigorating the blood, resisting blood coagulation and dissolving thrombosis, thereby improving blood circulation to the brain tissue and playing a beneficial role in cerebral infarction. Ultrasonic Doppler testing showed that the formulation could dilate the arteries of the lower extremities and increase their blood flow. Fluorescein angiography of the ocular fundus (concave interior of the eye) and ophthalmoscopic examination showed that the formula was effective in the prevention and treatment of early diabetic retinopathy. It also somewhat improved the relevant biochemical indices and clinical symptoms of renal complications of diabetes.

Administering the formula did not harm the heart, liver, kidney or any other internal organs and is considered to be a safe and effective traditional Chinese medical preparation for prevention and treatment of vascular complication of diabetes.

*Ji Wei Ling capsules, Zhong Ji Ling powders, Jin Li Da oral liquids, Jin Li Da powders, and Tong Xin Luo capsules*

Under the leadership of Wu Yi Ling, Medical Director of the Diabetes Research Institute in Xi Yuan Hospital, another approach to the pathology and treatment of diabetes with TCM has been developed, namely that the pathology of diabetes lies in the abnormal function of the Spleen. This leads to imbalance and disorder of fluid transportation and utilisation, thereby hampering normal absorption of nutrients even though the diet may be more than adequate. Great thirst, despite drinking copious amounts of water, is caused by the Spleen's inability to transport fluid to the Lung. Emaciation is caused by the Spleen's inability to move fluid (food essence) from the Stomach. This gradually leads to i. Spleen and Kidney deficiency, ii. deficiency of yin and yang, and iii. blood stagnation. Blood stagnation alone may lead to such serious complications as stroke, hemiplegia and heart disease. It was noted that the treatment approach developed for diabetes at the Diabetes Research Institute therefore encompassed more than the traditional idea of "invigorating yin and clearing away heat". On the basis of the above observations a series of herbal preparations have been formulated. A complete description of these products

can be found at the Window on China web site: [<http://china-window.com/zhongy/zyxxzx/yl/eylyjs.html>]. Address of the Medical Research Institute: Special Department of Diabetes, Xi Yuan Hospital, Xin Shi Bei Road No 385, Shi Jia Zhuang City, He Bei, China 050091

### 9. Clinical notes

- Non-insulin dependent diabetes mellitus: Prescribed herbs in therapeutic dosages, in combination with a sound diet and exercise program, provide clinically effective results often within 3 to 4 weeks. Clinical effectiveness is defined as a significant reduction in blood glucose level with less fluctuation throughout the day.
- Herbal medical treatment should always overlap with western medical treatment for at least 1 to 2 weeks before the dosage of any conventional diabetic drugs can be reduced.
- Patients should never discontinue taking conventional diabetic drugs abruptly, as there is risk of developing hyperglycaemia or diabetic ketoacidosis.
- Insulin dependent diabetes mellitus: Prescribed herbs in therapeutic dosages can help reduce the dosage and frequency of insulin injections, however it can never totally replace the need for supplemental insulin in insulin dependent patients.

### Notes

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- 16 China Guide Web site at <http://www.china-guide.com/health/diabetes.html>
- 17 Lin L, et al., A Clinical Study on Treatment of Vascular Complications of Diabetes with the Sugar-Reducing and Pulse-Invigorating Capsule, *Journal of Chinese Medicine* 14(1): 3-9, 1994.
- 18 Window on China Web site at <http://china-window.com/zhongy/zyxxzx/yl/eylyjs.html>

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Clinton J. Choate, L.Ac., MTOM, Dip.NBAO, received his traditional oriental medical training in both the US and China. He has been in private practice in Santa Monica, California for the last 10 years.