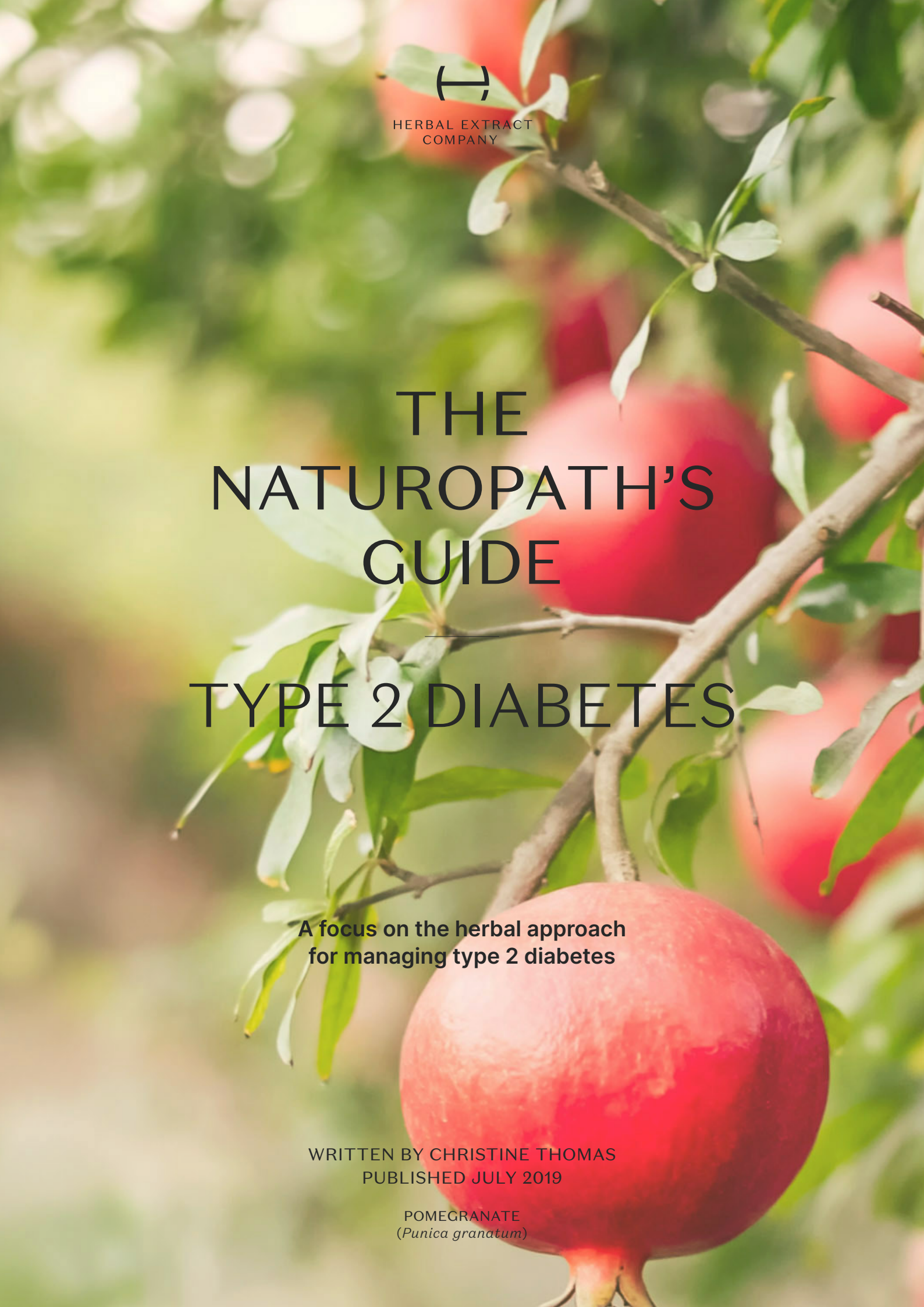

HERBAL EXTRACT COMPANY

THE NATUROPATH'S GUIDE

TYPE 2 DIABETES

A focus on the herbal approach for managing type 2 diabetes

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POMEGRANATE
(*Punica granatum*)

TYPE 2 DIABETES

The growing pandemic of diabetes poses an enormous public health challenge for almost every country across the globe.

Type 2 diabetes is a serious chronic endocrine disease resulting from a complex genetic and environmental interaction along with other risk factors such as obesity and a sedentary lifestyle. It is characterised by persistent hyperglycaemia.

Condition Overview

Type 2 diabetes is a noncommunicable lifestyle disease and one of the major consequences of the obesity epidemic. The 'diabesity' epidemic is likely to be the biggest epidemic in human history. The number of people with the disease has grown so fast that it is a juggernaut threatening to overwhelm health care systems worldwide. The combination of massive changes to diet and the food supply, combined with enormous changes to physical activity with more sedentary work and less movement, means most populations are seeing an alarming increase in type 2 diabetes.

Glucose is a form of sugar which is the main source of energy in the body. For the body to work properly it needs to convert glucose from food into energy. The hormone insulin is essential for the conversion of glucose into energy. In type 2 diabetes cells that respond to insulin become resistant (desensitised) to it. Therefore when a diabetic patient eats sugar (e.g. from sweets, cakes, biscuits) it cannot be converted into energy and stays in the blood causing high blood glucose levels. This is an extremely unhealthy state to be in because it results in systemic inflammation. Insulin resistance, metabolic syndrome and syndrome X mean the same thing. Insulin resistance is a metabolic condition that results in elevated blood sugar. Type 2 diabetes is the end result of untreated insulin resistance. Generally it takes five to 10 years for someone with insulin resistance to develop diabetes.

High blood sugar can produce long term complications such as cardiovascular disease (e.g. heart attacks), cerebrovascular disease (e.g. strokes), renal disorders leading to kidney failure and dialysis, many types of cancer including colorectal, liver, bladder, breast and kidney cancer, polycystic ovarian disease, eye disease (e.g. retinopathy) causing blindness, poor blood flow and nerve disease leading to problems like foot ulcers that can eventually lead to amputations. The risks of these outcomes are reduced by managing blood sugar levels. While it is not possible to reverse type 1 diabetes numerous studies have shown that type 2 diabetes can be prevented and delayed by the use of diet and lifestyle measures alone.

There are different types of diabetes but the most common are type 1, type 2 and gestational (during pregnancy).

Type 1 diabetes: Also known as juvenile, or insulin dependent diabetes mellitus, this is a chronic autoimmune condition that occurs when the body's own immune system attacks and destroys the insulin producing beta cells of the pancreas.

Type 2 diabetes: Also known as non-insulin dependent diabetes mellitus, this is the most common form of diabetes. It is characterised by chronic hyperglycaemia and impaired carbohydrates, lipids and proteins metabolism caused by complete or partial insufficiency of insulin secretion and/or insulin action. In Western countries it accounts for 90 to 95% of all cases of diabetes. In Australia, in 2017 to 2018, one million people (4.1%) had type 2 diabetes. There are also large numbers of people with silent, undiagnosed type 2 diabetes which may be damaging their bodies. An estimated two million Australians are at high risk of developing type 2 diabetes and are already showing early signs of the condition.

Gestational diabetes: Pregnant women are unable to overcome the insulin resistance that naturally occurs during pregnancy meaning blood sugar levels rise dangerously in both the mother and baby. Usually gestational diabetes disappears following the birth of the baby but it puts women at a higher risk of subsequently developing type 2 diabetes.

Type 3 diabetes: This condition is most often used to describe people who have type 2 diabetes and are also diagnosed with Alzheimer's or dementia.

Common Symptoms

Type 1 diabetes tends to be rapid onset (over a period of days or weeks) and is often accompanied by weight loss in spite of increased hunger. It can be life threatening therefore it is usually diagnosed quickly. In type 2 diabetes many people have no symptoms at all while other signs can go unnoticed being seen as part of 'getting older'. Therefore, by the time symptoms are noticed, complications of diabetes may already be present.

Common symptoms include:

- Elevated blood sugar (fasting blood sugar greater than 100mg/dL)
- Obesity and gradually putting on weight (although thin people can also get diabetes)
- Increased waist to hip ratio
- Frequent thirst
- Frequent urination
- Frequent hunger following meals
- Heart disease such as high blood pressure
- Itching, skin infections, having cuts that heal slowly
- Hyperlipaemia
- Feeling tired and lethargic
- Blurred vision, retina damage
- Mood swings
- Headaches
- Feeling dizzy
- Leg cramps
- Numbness

Risk Factors

The cause of type 2 diabetes consists of a matrix of genetic, epigenetic and lifestyle factors which interact with one another and operate within the larger physical and sociocultural environment.

Obesity

The single most important risk factor for diabetes is obesity, as excess body weight can interfere with the body's production of, and resistance to, insulin. The rate of diabetes worldwide has reached an alarming proportion which reflects the unfortunate global shift towards a Western lifestyle of unhealthy diet and physical inactivity, with obesity as the outcome. Perhaps what is most disturbing is that childhood obesity rates are also increasing. In 2017 to 2018 almost one quarter (24.9%) of Australian children aged five to 17 years were overweight or obese (17% overweight and 8.1% obese) and two thirds (67%) of Australian adults were overweight or obese (12.5 million people), an increase from 63.4% in 2014 to 15.

Dietary Factors

The dietary factors which may increase the type 2 diabetes risk are consuming excessive amounts of refined grains, sugar and sugar sweetened beverages, red and processed meat and processed foods and alcohol.

Sedentary Lifestyle

It is demonstrated that physical activity may contribute to a 30 to 50% reduction in the

development of type 2 diabetes. Physical activity interventions can improve glucose tolerance and reduce the risk of the disease because it simply helps achieve weight loss.

Smoking

Smoking increases the risk of type 2 diabetes by 30 to 40 per cent for active smokers compared to non-smokers.

Lack of Sleep

This is believed to act through its effect on glucose metabolism.

Excess Stress

Increases in serum cortisol, such as is seen in stress, leads to gluconeogenesis and therefore increased glucose levels in blood.

Nutrient Deficiencies

Vitamin D, vitamin K and vitamin B12 deficiency and low calcium and magnesium have been associated with a higher risk of type 2 diabetes.

Environmental Toxins

Increasing evidence supports the role of environmental chemicals in type 2 diabetes development including arsenic and other metals, persistent organic pollutants, phthalates and bisphenol A used to make certain plastics. Some pharmaceuticals have been linked to insulin resistance including selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs), the most commonly used antidepressant subclass.

Osteoarthritis

There is evidence suggesting that type 2 diabetes and elevated glucose concentration are particularly connected with osteoarthritis development and progression.

Nutritional Status of a Mother

The nutritional status of a mother during foetal development may also play a role with one proposed mechanism being DNA methylation.

Gut Environment

The vitality of the gut lining as well as the microbiome will impact the propensity for insulin resistance, obesity and blood sugar issues. Type 2 diabetes patients may have a more hostile gut environment that stimulates defence mechanisms against microbes and oxidative stresses. One study suggested that type 2 diabetes patients show a moderate degree of gut microbial dysbiosis with various butyrate producing bacteria being decreased and some opportunistic pathogens being increased.

Genetic Factors and Family History

Having a parent with diabetes increases the risk of developing it by 30 to 40%. Although genetic factors and family history also play a role they are not sufficient to explain the escalating diabetes epidemic that has occurred in recent decades. However the effects of susceptibility genes are amplified in the presence of unhealthy lifestyle factors (such as drinking soft drinks), supporting an important role of gene and environment interactions in the development of obesity and type 2 diabetes.

Racial and Ethnicity

People of different racial and ethnic groups are more likely to develop type 2 diabetes, heart disease and stroke. Aboriginal or Torres Strait Islander, African Americans, Mexican Americans, American Indians, Native Hawaiians, Pacific Islanders, Asian Americans, people from the Indian subcontinent and Chinese people have a higher risk for type 2 diabetes.

Age

As people get older their risk for type 2 diabetes, heart disease and stroke goes up.

Microbes

Strong evidence points to a key role of microbes in diabetes, both as infectious agents associated with the diabetic status and as possible causative factors. Diabetes related infections involve bacteria, viruses, fungi, parasites and, possibly, prions (misfolded proteins which characterise several fatal neurodegenerative diseases in humans). These

infections include tuberculosis, herpes zoster and urinary tract infections. Since people with diabetes are more exposed to antimicrobials than people without diabetes drug resistance is particularly prevalent in this group.

Urbanisation

Diabetes is more prevalent in the urban versus the rural environment. Epidemiologically high levels of walkability and green space are associated with lower type 2 diabetes risk while increased levels of air pollution and noise are associated with greater risk. Thus an important risk factor is urbanisation itself which is linked to consumption of unhealthy foods, sedentary lifestyle and scarce exposure to sunlight.

Gender and Hormones

In both men and women sex hormone imbalances and reproductive disorders are associated with a higher risk of type 2 diabetes development.

How To Get The Correct Diagnosis

There are a plethora of tests for diabetes including fasting blood glucose, post meal blood glucose levels, glycosylated haemoglobin (HbA1c), urinalysis (dipstick), blood pressure and anthropometric measurements including body mass index, waist circumference and body composition measured through, for example, skinfold thickness. Since multiple parameters are involved in type 2 diabetes the combined results of these in house and pathology tests can give conclusive evidence. Researchers have demonstrated that noninvasive screening tools are more cost effective than a blood test as a first stage screening. A variety of risk assessment tools based on self assessed, biochemical measures or genetic markers have been developed for the prediction of type 2 diabetes, which are more practical and valuable than conventional blood glucose screening tests, so that interventions can be applied to those with impaired glucose tolerance to delay the onset of the disease.

Conventional Treatment & Prevention

A conventional practitioner will follow an established algorithm for diabetes management that includes a medically established protocol centred on monitoring blood sugar and prescribing medications to balance it. Most patients with type 2 diabetes begin with lifestyle changes (lifestyle counselling, weight loss education, exercise etc). When lifestyle efforts alone have not achieved or maintained glycaemic goals, metformin (dimethylbiguanide) monotherapy would be added at, or soon after, diagnosis, unless there are contraindications or intolerance. Metformin has become the preferred first line oral blood glucose lowering agent to manage type 2 diabetes. Interestingly its history is linked to *Galega officinalis* (goat's rue), traditionally used to treat diabetes, found to be rich in guanidine, which, in 1918, was shown to lower blood glucose. When lifestyle changes and oral antidiabetic agents fail to achieve adequate glycaemic control it is generally required for patients to initiate insulin therapy. Although oral hypoglycaemic agents and insulin are the mainstay of treatment of type 2 diabetes, and are effective in controlling hyperglycaemia, they have adverse side effects and fail to significantly alter the course of diabetic complications.

" As a society, if we are not careful, we might find that the price we pay for our prosperity is more than we can afford."

INTERVENTION	Anti-inflammatory	Antiobesity	Antioxidant	Cardioprotective, hypolipidaemic, circulatory stimulant	Hepatoprotective	Hypoglycaemic	Immunomodulator
Arjuna	✓		✓	✓		✓	
Cinnamon			✓	✓			✓
Elderberry	✓		✓				
Fenugreek	✓			✓			
Goat's Rue						✓	
Graviola	✓		✓	✓	✓	✓	
Green Tea	✓	✓	✓	✓	✓	✓	✓
Gymnema	✓				✓	✓	
Maritime Pine	✓		✓	✓	✓	✓	
Paw Paw	✓		✓	✓	✓		
Pomegranate	✓		✓	✓		✓	✓
St Mary's Thistle	✓		✓		✓	✓	

Natural Therapies For Treatment & Prevention

The objective in naturopathic treatment of type 2 diabetes is to reduce the complications of the disease predominantly by reducing insulin resistance, regulating blood sugar, achieving healthy weight, preventing complications and ensuring the overall wellbeing of the patient utilising modalities such as herbal medicine, nutrition and lifestyle counselling. This will include a thorough review of other systems impacted by diabetes including the heart, kidney, liver and brain.

Management of modifiable risk factors includes poor diet, overeating, nutritional deficiencies, high refined grains and sugar consumption, lack of exercise, being overweight/obese, lack of sleep and stress. Environmental toxins and hormonal imbalances are also noted for initiating or contributing to insulin resistance. Considering each of these factors and treating them will help to reverse this process and contribute to creating a healthier environment. Lifestyle counselling strategies will engage patients in their own disease management and encourage lifestyle improvement.

Insulin resistance can be reversed but the sooner the better. Care is often comanaged with doctors, endocrinologists and diabetes specialists to provide the best patient outcomes. The strategies discussed here can significantly lower a person's need for insulin and a doctor will need to monitor their insulin and make the necessary changes.

Patients need to understand the continuum of type 2 diabetes. If they are on an upward trajectory of insulin resistance and a downward trajectory of insulin production then weight loss, healthy eating and physical activity will slow down the insulin loss trajectory and improve insulin sensitivity. However if they gain weight back the diabetes comes back. The reversal of type 2 diabetes is seen as restoring function and bringing the body back into glycaemic balance. The disease is considered to be reversed when an individual is no longer dependent on medication to maintain blood glucose levels within a fairly normal range.

As every person experiences type 2 diabetes differently a comprehensive individualised treatment plan, using various therapies to manage the core issues and complications, will assist in regulating blood sugar and manage the disease.

Herbs can be used to help regulate blood sugar levels and offset symptoms but are no substitute for a healthy diet and lifestyle. This is difficult. Such practice takes time and it needs to be made a habit by doing it every day.

A therapeutic approach could include these factors:

Diet

Dietary guidance strives for a more balanced blood sugar throughout the day. A diet diary and/or a blood sugar log will assist in this. Even though diet is quite variable owing to food availability, personal preferences and different cultures as a general rule:

Foods to Include

Get most of the calories at the beginning of the day. Eat like a king for breakfast, lunch like a prince and dinner like a pauper. Follow a low carbohydrate, low glycaemic index (GI) food and high protein diet. Accentuate organic wholefoods, vegetables, leafy green vegetables, fruits, healthy fats and protein such as nuts, legumes and fish, and unrefined grain products with high natural fibre content. Eat foods and herbs high in antioxidants, such as blueberries, to stop free radical damage and oxidation.

Foods to Avoid

Avoid red meat, highly processed, deep fried, smoked and cured foods, sugars, artificial sweeteners, alcohol and coffee. Avoid snacks but if necessary eat protein or healthy fat snacks.

Hydration

Increase hydration with water and herbal teas.

Inflammation

Address inflammation with an anti-inflammatory lifestyle. Common food allergens like gluten, soy and dairy can contribute to systemic inflammation.

Gut Environment

Determine if there is underlying gastrointestinal pathology and treat accordingly.

Assess Nutrient Levels

Supplement prescriptions most commonly include chromium and omega-3 fatty acids. Chromium has a high level of research supporting its efficacy and omega-3 fatty acids have supportive evidence for diabetes specifically and clear evidence for the treatment of other cardiovascular conditions that may be concurrent in the diabetic patient.

Lifestyle

Increase Exercise

Walking, the most popular choice of physical activity, has been shown to reduce the relative risk of type 2 diabetes by 60% when walking for 150 minutes a week, compared to walking for less than 60 minutes a week. For people who have difficulty with walking because of joint problems other forms of physical activity for example, cycling, swimming or gym-based activities, should be encouraged. Start slow and consider a personal trainer for interval and strength training. Avoid long periods of being sedentary and sitting at a desk.

Increase Sleep

Assess sleep habits and address any problems.

Decrease Stress

Stress can make cells less insulin sensitive. Include meditation, yoga, breathing exercises, tai chi, walks in nature or re-evaluating priorities.

Decrease Environmental Chemicals

These have been linked to insulin resistance so assess toxic elements. Avoid smoking, harsh cleansing products and herbicides, pesticides, fungicides and BPA in plastic. Avoid SSRIs and SNRIs.

Assess Hormonal Status

Hormonal imbalance of sex hormones and reproductive disorders, such as polycystic ovary syndrome in women or erectile dysfunction in men, are associated with higher type 2 diabetes risk.

Potential Treatment Plans

Type 2 diabetes	Cinnamon	Goat's Rue	Gymnema	Paw Paw	Pomegranate	St Mary's Thistle
Obesity	Fenugreek	Green Tea	Gymnema	Maritime Pine	Pomegranate	St Mary's Thistle
High blood pressure and type 2 diabetes	Arjuna	Cinnamon	Elderberry	Graviola	Maritime Pine	
Hypoglycaemia	Cinnamon	Fenugreek	Goat's Rue	Gymnema	St Mary's Thistle	

Desired Herbal Actions and Potential Herbs Include:

Ethnobotanical information reports there are about 800 plants that may possess antidiabetic potential and it is estimated that more than 1000 plant species are being used as folk medicine for diabetes. Following is a small selection of these.

Adaptogen, Adrenal Tonic, Relaxing Nervine

To support cortisol release and reduce blood sugar. Herbs such as astragalus, codonopsis, Korean ginseng, liquorice, passion flower, rehmannia, reishi, schizandra, shatavari, Siberian ginseng, withania.

Anti-inflammatory

Hyperglycaemia promotes inflammation via increased cytokine induction. Herbs such as andrographis, arjuna, bilberry, boldo, cat's claw, chamomile, coleus, elderberry, fenugreek, ginger, ginkgo, golden seal, graviola, green tea, horsechestnut, liquorice, maritime pine, parsley root, passion flower, pau d'arco, paw paw, pomegranate, rehmannia, reishi, rose hips, St Mary's thistle, thyme, tribulus, turmeric, yarrow, withania.

Antiobesity

Weight management assistance. Herbs such as bladderwrack, coleus, green tea, liquorice, rose hips.

Antioxidant

Oxidative stress lies at the root cause of a number of chronic diseases including diabetes. Antioxidants can help prevent and treat complications involving fine blood vessels such as diabetic retinopathy. Herbs such as albizia, andrographis, arjuna, astragalus (reduced the free radicals, had antioxidant activity and effectively controlled blood glucose in a study on 84 pregnant women with gestational diabetes. The women were divided into insulin and insulin plus astragalus groups after regular dietary control and insulin treatment to maintain stable blood glucose level. The patients with both insulin and astragalus treatments showed significantly increased antioxidant defence activity and decreased oxidative stress markers, renal function and blood lipids in comparison with those with exclusive insulin treatment. There were no reported safety concerns in a trial of pregnant women with gestational diabetes.), baical scullcap, barberry, bilberry, boldo, cat's claw, chamomile, cinnamon, codonopsis, elderberry, garlic, ginger (a randomised, double blind placebo controlled trial of 88 diabetic participants recently found that one gram of ginger taken three times daily for eight weeks significantly improved fasting blood sugar, fasting insulin and insulin sensitivity), ginkgo, glossy privet, golden seal, graviola, green tea, hawthorn, horsechestnut (useful for the complication of leg ulcers), Korean ginseng, liquorice, maritime pine, olive leaves, parsley root, pau d'arco, paw paw, pomegranate, reishi, rose hips, rosemary, St Mary's thistle, thyme, turmeric, withania.

Cardioprotective, Hypolipidaemic, Circulatory Stimulant

Cardiovascular disease is the most prevalent cause of morbidity and mortality in diabetic patients. Cardiovascular risk factors such as obesity, hypertension and dyslipidaemia are common in patients with diabetes placing them at increased risk for cardiac events. Herbs such as arjuna, astragalus, bilberry, cayenne, coleus, cinnamon, garlic, ginger, ginkgo, glossy privet, graviola, green tea, hawthorn, maritime pine, parsley root, paw paw, pomegranate, rosemary (cerebral circulation), rehmannia, rose hips, shatavari, tribulus, turmeric, withania.

Hepatoprotective, Bitters

To support the liver which has a role in regulating blood sugar. Bitters can assist in normalising blood sugars. Herbs such as andrographis, astragalus, baical scullcap, barberry, blue flag, boldo, chamomile, gentian, globe artichoke, glossy privet, golden seal, graviola, green tea, liquorice, parsley root, rosemary, St Mary's thistle, shatavari, turmeric, yarrow.

Hypoglycaemic

Blood sugar regulating herbs include aloes, arjuna, barberry, bilberry, cinnamon, codonopsis, fenugreek, garlic, glossy privet, goat's rue, golden seal, graviola, green tea, gymnema, Korean ginseng (a double blind, placebo controlled study with 36 subjects

treated for eight weeks found that 200mg of Korean ginseng elevated mood, improved psychophysical performance and reduced fasting blood glucose and body weight in patients with newly diagnosed type 2 diabetes), maritime pine, nettle, olive leaves, passion flower, paw paw, pomegranate, rehmannia, rose hips, sage, St Mary's thistle, shatavari, tribulus, turmeric, withania (has been studied for its potential benefits for those with type 2 diabetes with one small study showing a decrease in blood glucose comparable to an oral hypoglycaemic drug, as well as significantly decreased low-density lipoproteins and very low-density lipoproteins cholesterol levels. Following the human study researchers conclude that withania is a potential source of hypoglycaemic, diuretic and hypocholesterolaemic agents. Six mild noninsulin dependent diabetes mellitus subjects and six mild hypercholesterolaemic subjects were treated with withania (six 500mg capsules per day [two after every meal] accounting for a dose of 3g per day) for 30 days.

Immunomodulator

People with diabetes are more susceptible to developing infections as high blood sugar levels can weaken the patient's immune system defences. Herbs such as andrographis, astragalus, cat's claw, cinnamon, elderberry, ginger, glossy privet, Korean ginseng, liquorice, olive leaves, paw paw, rehmannia, reishi, shatavari, Siberian ginseng, turmeric, withania.

Elderberry
(Sambucus nigra)

Herbal Support Could Include:

HERB NAME	DESCRIPTION	ACTIONS
Arjuna *(Terminalia arjuna)* 	High doses of arjuna ethanolic extract (250 and 500mg/kg body weight) have been shown to produce a significant reduction in lipid peroxidation in induced diabetic rats. The results of an earlier study indicate that arjuna exhibits antioxidant activity through correction of oxidative stress which supports the traditional use of arjuna in diabetes.	Hypoglycaemic Antioxidant Cardioprotective Heart Tonic Hypotensive Hypolipidaemic Anti-inflammatory
Cinnamon *(Cinnamomun verum)* 	Cinnamon helps increase insulin sensitivity and decrease blood sugar levels. In 2017 a four-month randomised, double-blind, placebo controlled clinical trial evaluating the potential effects of true cinnamon extract as a pharmaceutical agent in patients with type 2 diabetes was conducted in Sri Lanka. While the results have not yet been published one of the doctors involved told the author there was a reduction in fasting blood sugar levels and glycated haemoglobin (HbA1c). For people with diabetes this is important as the higher the HbA1c the greater the risk of developing diabetes related complications. There was also a reduction in total cholesterol and low-density lipoprotein (LDL) levels. Positive results were found in one trial examining cinnamon in 60 people with type 2 diabetes. Groups consumed between one to six grams of cinnamon daily or placebo. The results found one, three or six grams of cinnamon per day reduces serum glucose, triglyceride, LDL cholesterol and total cholesterol in people with type 2 diabetes and suggest that the inclusion of cinnamon in the diet of people with type 2 diabetes will reduce risk factors associated with diabetes and cardiovascular diseases.	Hypoglycaemic Hypoinsulinaemic Antioxidant Anticancer Immunomodulator Hypolipidaemic
Elderberry *(Sambucus nigra)* 	Elderberry could be used in type 2 diabetes management a 2017 *in vivo* study found. At least seven previous studies have revealed the potential of elderberry in diabetes status management. The lipophilic (dissolving in fats) extract decreased insulin levels by lowering insulin secretion. Elderberry polar extract (obtained after removal of the lipophilic components) led to a reduction in fasting blood glucose thus controlling glucose metabolism by correcting hyperglycaemia. Both extracts lowered insulin resistance.	Immunomodulating Antioxidant Anti-inflammatory

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Fenugreek *(Trigonella foenum-graecum)* 	Fenugreek has been used since at least Greek and Roman times for blood sugar regulation. It seems to regulate the pancreas' production of insulin. At least 10 placebo controlled clinical trials with very similar results showed a reduction in fasting blood glucose and two-hour post load glucose with a wide range of fenugreek doses. Fenugreek has been shown to improve fasting glucose in people with type 2 diabetes and metabolic syndrome without affecting people with normal blood sugar. Studies have also shown benefits for type 1 diabetes.	Hypoglycaemic Anti-inflammatory Hypo-cholesterolaemia
Goat's Rue *(Galega officinalis)* 	Goat's rue was the first medicinal plant described with a clear antidiabetic effect. The British Herbal Pharmacopoeia approves it's use in diabetes.	Hypoglycaemic
Graviola *(Annona muricata)* 	Ethanolic extracts of graviola leaves have been clinically evaluated in relation to their hypoglycaemic activity. A randomised, parallel grouped, double blind phase II clinical trial in patients with type 2 diabetes was conducted recently. Groups of patients were given one, two or three capsules of ethanol extract from graviola leaves (180mg) plus five milligrams of glibenclamide (an antidiabetic drug) for 30 days, and another group only received glibenclamide. The results showed a decrease in the blood glucose or glycaemia level in patients receiving graviola compared to patients who did not receive it.	Anti-inflammatory Antioxidant Hypoglycaemic Hepatoprotective Hypotensive

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Green Tea *(Camellia sinensis)* 	Positive effects of green tea supplementation have been observed in the prevention and control of type 2 diabetes. In recent years there are a considerable number of randomised controlled trials to suggest that green tea reduces body weight in the short term and has favourable effects on body composition. There is also growing evidence for using green tea in the prevention and treatment of obesity and coexisting diseases. Clinical study observations have included moderate weight loss, reduction in waist circumference and improvement in metabolic parameters. It has been suggested that green tea may be helpful when combined with an exercise program.	Antioxidant Antiobesity Anti-inflammatory Antihyperlipidaemic Anticarcinogenic Cardioprotective Hypocholesterolemic Antiarteriosclerotic Hypoglycemic Neuroprotective Hepatoprotective
Gymnema *(Gymnema sylvestre)* 	The key herb for diabetes. This Ayurvedic herb has a history of use for diabetes and its native name ‘gumar’ means ‘sugar destroyer’. Gymnema has wide ranging actions on blood glucose metabolism and is therefore able to alleviate a range of diabetic complications, including cardiovascular risk factors such as hypertension, hyperlipidaemia and atherosclerosis, and the diabetic complications trio retinopathy (damage to the eyes), nephropathy (damage to the kidneys), neuropathy (damage to the nerves), as well as susceptibility to infection and erectile dysfunction. Researchers have found that the appetite can be suppressed for up to 90 minutes after taking gymnema in liquid form. This is beneficial for weight loss if sugar cravings are uncontrollable. Approximately 100 lab, animal and human studies have been performed on gymnema with most supporting its ability to promote blood sugar homeostasis and provide other health benefits. Randomised, placebo-controlled studies have shown it decreased fasting blood glucose, HgbA1c in type 2 and type 1 diabetics. In type 2 it increased insulin while it decreased insulin requirements in type 1. It is possibly the best researched herb for the regeneration of beta cells increasing the number of cells and stimulating their function. In preclinical trials gymnema also helps control triglyceride and blood lipid levels, decreases body weight, promotes healthy insulin production via the pancreas and decreases glucose absorption in the intestines.	Hypoglycaemic Anti-inflammatory Liver Tonic

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Maritime Pine *(Pinus pinaster)* 	After 12 weeks of supplementation a standardised extract of maritime pine bark resulted in improved diabetes control, lowered cardiovascular risk factors and reduced antihypertensive medicine use in people with type 2 diabetes. In another study the same extract lowered fasting blood glucose levels.	Hypoglycaemic Antioxidant Anti-inflammatory Anticancer Cardioprotective Antiaging Neuroprotective
Paw Paw *(Carica papaya)* 	Paw paw is traditionally used for diabetes and hypertension. It is effective at controlling blood glucose levels and improving lipid profiles in diabetic rats.	Hypoglycaemic Antioxidant Anti-inflammatory Antihypertensive Immunomodulator
Pomegranate *(Punica granatum)* 	The findings of a recent study suggest pomegranate is a promising medication for symptomatic management of diabetic neuropathy, a safe antidiabetic agent and a safe treatment for microvascular and macrovascular complications of diabetes.	Hypoglycaemic Antioxidant Anti-inflammatory Anticarcinogenic Cardioprotective Neuroprotective
St Mary's Thistle *(Silybum marianum)* 	St Mary's thistle is regarded as a potent agent against insulin resistance and diabetes induced hyperglycaemia.	Hepatoprotective Antioxidant Anti-inflammatory Hypoglycaemic

Graviola
(Annona muricata)

Conclusion

Without a global call to arms diabetes will exact an increasingly devastating toll around the world. It is a dangerous legacy to pass on to the next generation and as a society, if we are not careful, we might find that the price we pay for our prosperity is more than we can afford. Type 2 diabetes care is complex and goes beyond glucose control involving multidisciplinary and integrative programs. Focusing on the whole person naturopaths take the time to identify and address the factors that play significant roles in type 2 diabetes. Drastic lifestyle changes around diet and exercise are essential in the treatment program however many patients have a difficult time making such changes.

Naturopaths can be highly effective in engaging patients to take control of their own health. Because they emphasise educating the patient naturopaths are often successful in helping individuals with diabetes to make and sustain shifts in nutrition and physical activity that can improve or reverse progression of the disease. Patients can lose weight, gain significant energy and reduce their glucose numbers, lipid values and blood pressure. They can see their damaged nerves and kidneys recover to full functioning and those without such damage will have protection from developing it.

Resources

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