

# Diabetes

by Ros Ben-Moshe

**I**n Australia, 7.5 per cent of the population have diabetes, a total of nearly one million people. Categorised as one of the diseases of affluence, along with obesity and heart disease, diabetes has been rising at an alarming rate thanks to the Western-influenced highly refined diet. Cultures still consuming a 'primitive' diet are largely immune from diabetes with overwhelming evidence that as they switch from their native diets to the western model, diabetes and a host of other diseases grow rapidly.

## What is diabetes?

Diabetes is essentially too much sugar in the blood, caused by an insufficient or non-existent supply of the hormone insulin, which is supplied by the pancreas. In a healthy exchange, insulin stimulates the cells to absorb and store the glucose (sugar). If insufficient or no insulin is produced, blood sugar remains in the bloodstream, causing a range of symptoms including fatigue, excessive urination, thirst, cardiovascular and kidney damage.

There are two main types of diabetes: Type 1 (insulin-dependent or juvenile onset) and Type II (non-insulin-dependent or adult onset). Type 1 is less common, more severe and starts suddenly, affecting mainly children but sometimes adults up to the age of 35. People with Type 1 diabetes must take regular insulin injections as their pancreas produces virtually no insulin.

The other form of diabetes is Type II, which usually starts slowly, develops over the age of 40 and tends to be associated with obesity. This form of diabetes is the most prevalent and is on the rise, with 75 per cent of all cases of diabetes being Type II. In many cases of Type II diabetes, insulin is still being produced by the pancreas but it is not effectively used because cells have become resistant to it. This is a common result of a system that has for years been bombarded with too many highly refined carbohydrates and sugary foods.

## The cause

Although cases of diabetes can be traced back hundreds of years, its development is still not fully understood. It's thought that diabetes develops in people born with a predisposition to diabetes, which may or may not eventuate depending on environment and diet. This fact has been well known for centuries with plant foods and grains being used in treatments across the globe from Europe to China and the Middle East. Modern tests have indeed confirmed that foods such as onions, garlic, cinnamon, high-fibre foods, beans, lentils, fenugreek

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seeds, fish, barley and high chromium foods such as broccoli can lower blood sugar and/or stimulate insulin production.

What is understood is that insulin resistance is mostly determined by genetic makeup and strongly influenced by diet, body weight and physical fitness. A genetic predisposition does not mean you will get diabetes. However, if diet is neglected, a genetic susceptibility to diabetes may eventuate into full-blown diabetes. Foods to avoid are those that stress the pancreas, causing it to produce too much insulin on too many occasions, debilitating insulin's function to transport glucose from the bloodstream to the muscles where it is either stored or converted to energy.

## Case study

Until the 1930s, Australian Aborigines ate few processed foods, consumed meat from wild animals high in protein and low in fat, and had a high content of dietary fibre. Missionaries introduced flour and sugar and gradually many adopted a typical western diet. By the 1980s, 20 per cent of the adult Aboriginal population were diagnosed with diabetes. A study conducted in the 1980s organised a group of 10 urbanised, overweight type II Aborigines and challenged them to return to their native existence, eating only what they could hunt, fish or collect for seven weeks. During the seven weeks, their bodyweight dropped, they were more active, blood pressure fell towards normal as did their blood sugar levels.

## Overloaded

Bodyweight is a significant factor in controlling blood-sugar levels. Significant weight gain results in many negative outcomes including carbohydrate intolerance, higher insulin levels and insulin insensitivity in both fat and muscle tissue. It is the progressive development of insulin insensitivity that is believed to be the underlying factor in





Type II diabetes. Approximately 90 per cent of people with non-insulin-dependent diabetes are overweight. Restoring ideal bodyweight is now thought to be the simplest way to cure in the majority of people.

Studies have found that excessive fat in the diet, especially saturated animal fat, damages insulin's effectiveness. Furthermore, a study at the University of Colorado's Health Sciences Centre found that eating an extra 40g of fat a day (equivalent to a 115g (4oz) fast food hamburger and large fries) triples your odds of developing diabetes.

However, the 'good' fats — those containing omega 3 oils — have been found to promote better insulin activity with less insulin resistance. Studies from Dutch researchers found that fish eaters, consuming as little as 30g a day, were half as likely to develop Type II diabetes as non fish eaters.

## Dairy foods

Avoiding dairy in the first year of an infant's life, particularly those who are genetically prone to diabetes, may prevent the onset of Type 1 diabetes. It appears that certain proteins in cows' milk provide the antigen (foreign substance) that fools the immune system into attack-

ing its own tissue. In specific relation to diabetes, it's the beta cells produced in the pancreas that are destroyed, thwarting their ability to make insulin. A study at a hospital in Toronto found these antibodies in the blood of 100 per cent of a group of children with Type 1 diabetes, indicating a reaction to these specific milk proteins. Only 2.5 per cent of non-diabetic children in this study had such antibodies. Further studies have shown that feeding children exclusively on breastmilk for the first two to three months reduces their chance of developing diabetes by the age of 14 by 40 per cent, with longer periods of breastfeeding further decreasing the risk of developing diabetes.

## Chromium

Chromium is a critical nutrient in blood-sugar regulation as it increases insulin's efficiency. If chromium levels are low, blood-sugar levels may remain high. The good news is that in individuals where chromium is low, supplementing the diet with chromium has been demonstrated to lower overall bodyweight, increase lean body mass, improve glucose tolerance and decrease total cholesterol and triglyceride levels. High chromium foods include brewer's yeast, broccoli, whole grains (especially barley), cereals, nuts, oysters, mushrooms, rhubarb and beer and wine. Broccoli tops the list as the highest known quantity of chromium. One analysis showed that 140g of broccoli contained 22 micrograms of chromium, 10 times more than any other food.

## Food fighters

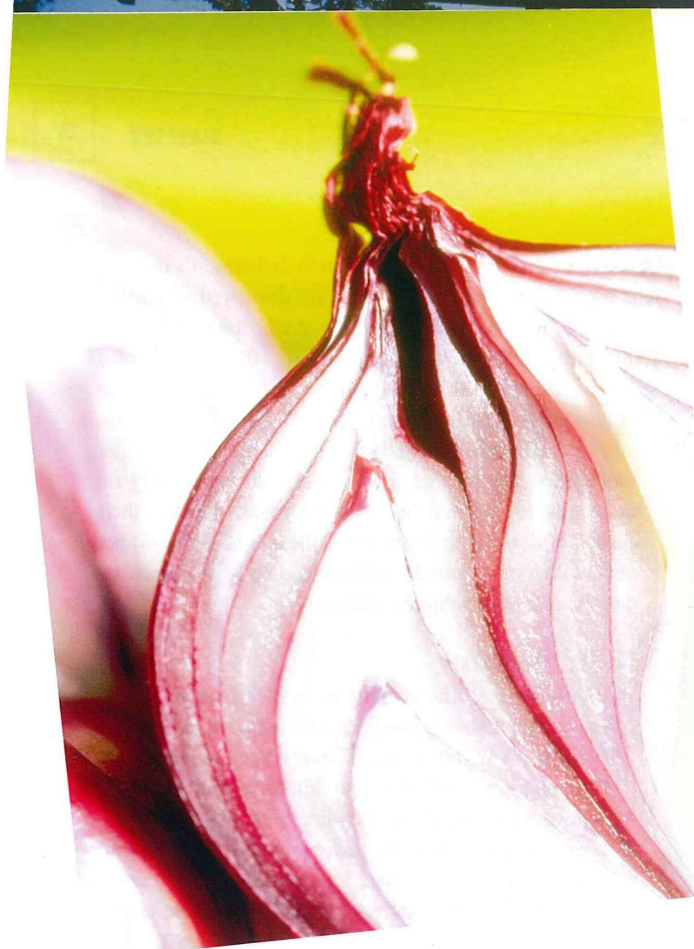
Historically, onions are an effective treatment for diabetes as they have an ability to lower blood sugar. The active hypoglycaemic agents (things that lower blood sugar) have been isolated as allyl propyl disulphide (APDS) and allicin, and their powers are effective whether the onions are raw or cooked.

Artichokes, both globe and jerusalem, are very low in calories because most of the carbohydrate is in the form of inulin, a polysaccharide or starch the body handles differently from other sugars. Inulin has been shown to improve blood-sugar control. Artichokes also contain compounds that lower blood cholesterol and triglyceride levels. The jerusalem artichoke has one of the highest known quantities of inulin.

Bitter melon is a tropical fruit that has been used extensively as a remedy for diabetes in folk medicine. It contains a compound known as charantin that is more potent than the drug tolbutamide. Bitter melon also contains an insulin-like compound polypeptide-P, or vegetable insulin. As little as two ounces of the juice has shown good clinical results. Available from Asian grocery stores and some markets, the bitter melon is a green, bumpy cucumber-shaped fruit and should be firm like a cucumber. They really are bitter, so if you're game enough to try one, you may like to take it in juice form as a two-ounce shot.

Fenugreek seeds have long been used in India and the Middle East in the treatment of diabetes. Studies at both the Hebrew University of Jerusalem and India's National Institute of Nutrition of people with Type 1 diabetes have shown that ground fenugreek seeds lower blood sugar, lower blood cholesterol and improve glucose tolerance. Additionally, they identified a gel-like substance called galatomanan that binds bile acids, thereby reducing cholesterol.





Legumes are rich in many important nutrients, including fibre, that help to improve blood-sugar control. The fibre found in legumes turns into a gel in the digestive tract, which increases the time required for the absorption of sugar in foods, thereby preventing post-meal blood surges. Legumes also reduce cholesterol, a common complication for people with diabetes. Herbs and spices including cinnamon, cloves, turmeric and bay leaves have been shown to stimulate insulin activity.

### Vitamins and minerals

People with diabetes should make sure they have sufficient vitamins and minerals in their diet. Not only will this benefit general health, but many antioxidants, such as vitamins E, C and betacarotene, will help prevent clogging of the arteries. The risk of heart disease is two to three times higher in people with diabetes, concluded James Anderson MD from the University of Kentucky College of Medicine. Other vitamins often found to be low are the B group, as well as the minerals copper, magnesium, manganese and phosphorus. A healthy balance of these essential vitamins and minerals may not only help reduce medication dosage on Type 1 diabetics and improve the blood-sugar balance, but most importantly can prevent medical complications that are often associated with diabetes.

### Evening primrose oil

Diabetes can also lead to severe nerve and eye damage. The damage to the nerves, known as diabetic neuropathy, can lead to muscle weakness, skin problems and impotence in males and has been the main reason for amputations. The damage to the eyes, known as diabetic retinopathy, can lead to blindness. In Judy Graham's book *Evening Primrose Oil* (Harper Collins 1993), she outlines how evening primrose oil can treat diabetic neuropathy and prevent diabetic retinopathy. The findings are the result of various tests outlined in Graham's book, which basically show that the oil helps with the metabolism of certain critical fatty acids.

### The Glycemic Index

The Glycemic Index (GI) assesses how foods high in carbohydrates affect blood sugar levels. This index measures increases in the two to three hours after eating. Foods that make blood sugar rise quickly

are assigned a high GI, and foods that make blood sugar rise slowly are assigned a low GI. For many years it was assumed that simple carbohydrates (sugar) were the main cause of a spurt in blood sugar levels. However, in the 1970s and 1980s, studies measuring blood glucose levels after eating a variety of foods came up with some rather startling facts. Glucose was assigned a rating of 100. Foods with GI's below 55 were rated as low, foods above 70 as high and foods in between 55 and 70 as intermediate.

The most rapid rise in blood sugar was found to be from carrots, baking potatoes and processed cereals. They rated higher than many sweets and icecreams. Even rice cakes, for example, have been shown to cause a spurt in blood sugar levels as they contain rapidly digested forms of starch, and because they're puffed up, they offer a greater surface area for rapid digestion.

Slowly digested, low GI foods not only keep hunger at bay for longer, thereby assisting weight control, but they stress the pancreas and insulin levels the least. This doesn't mean high GI foods should be totally avoided, but that more low GI foods should be eaten and, whenever possible, in conjunction with high GI foods to help prevent huge soars in post-meal blood sugar levels. Even the World Health Organisation has recommended eating low GI foods.

Factors such as variety, cooking and processing may affect a food's GI. Some foods that are particularly sensitive to such factors include bananas, rice and potatoes. For example, under-ripe bananas were given a GI of 43, yet over-ripe were given 74. As the banana ripens, starch is affected, releasing more sugars. Although numbers vary from study to study, a comprehensive listing of popular foods on the Glycemic Index can be found in Dr Andrew Weil's *Eating well for Optimum Health — The essential guide to food, diet and nutrition. The G.I. Factor: The Glycaemic Index Solution*, published in Australia and New Zealand by Hodder Headline Australian Pty Limited in April 1996, also provides comprehensive information on GI foods. It's important to remember that the glucose response to a particular food is individual, placing the onus on the individual to determine a particular food's GI.

So whether it's to manage diabetes or help prevent its possible onset, a change in diet may very well make all the difference. The best diet should aim to consist of about 50-60 per cent of calories from complex carbohydrates, less than 30 per cent in fat (less than 10 per cent in saturated fats), and 30-40 grams of fibre each day. In real terms, avoid giving cows' milk to babies for at least the first two months, consume more fish, legumes, high chromium foods and grains and eat more foods that take longer to digest, thereby reducing the stress levels of your pancreas and in turn your whole body.

## Recipes

### Breakfast Bars

1½ cups rolled oats

1 apple, grated

½ cup chopped dates

¼ cup slivered almonds

1 tablespoon toasted sesame seeds

½ cup honey

¼ cup oil

1 teaspoon cinnamon

Combine ingredients in a bowl. Preheat oven to 200 degrees. Press into a greased 20cm baking tin and bake for about 25 minutes or until golden brown. Allow to cool slightly before cutting into bars and transferring to a cooling tray to get a better crunch!



**Dhal Dip**

1½ cups red lentils  
 2 medium onions, finely chopped  
 2 cloves garlic, crushed  
 2 tomatoes, skinned and chopped  
 1 small carrot, chopped  
 1 teaspoon turmeric  
 1 teaspoon cumin  
 ½ teaspoon fenugreek  
 1 teaspoon chilli powder  
 2 cups water  
 2 tablespoons tomato paste  
 sea salt  
 1 tablespoon oil for frying

Heat oil in a large saucepan, saute onion until translucent then add garlic. Saute for a further 2 minutes before adding the spices. Then add remaining ingredients and bring to the boil. Cover and simmer for about 30 minutes, stirring occasionally to prevent the mixture from catching. Allow to cool then serve with an assortment of vegetable crudites. Of course, this dish can also be served hot on a bed of rice as a main.

**Broccoli & Onion Tart****Pastry**

2 cups wholemeal or rye flour  
 125g butter  
 ⅓ cup iced water  
 1 egg  
 1 teaspoon salt

**Filling**

2 medium onions, sliced very thin  
 2 cups broccoli, cut into small portions  
 2 free-range eggs  
 1-2 tablespoons water  
 2 tablespoons fresh parsley, finely chopped  
 1 cup milk (soy or regular)  
 sea salt & ground black pepper  
 2 tablespoons parmesan (or for dairy-free use 2 tablespoons ground almonds)  
 olive oil for frying

Place pastry ingredients into a food processor and blend until the mixture becomes a ball. Add a little more water or flour if necessary. Do not over-blend. The pastry can then be rolled out onto a floured surface and transferred to a greased flan dish or can even be hand-pressed into the dish (my preferred shortcut). Remove excess pastry with a knife then prick the bottom of the pastry in several places. Place in a pre-heated oven of 210 degrees for 5-7 minutes for a pre-bake.

In a large frying pan, heat oil. Saute onions until translucent, then add broccoli. Add a little water to prevent the vegetables from sticking. Saute for a few more minutes before spreading over the pastry. In a little bowl whisk together the eggs, milk, parsley, salt and pepper, then pour over the vegetable mixture. Top with either the parmesan or ground almonds. Place in a pre-heated oven of 180 degrees for 35 minutes or until lightly golden.



**Broccoli tops  
the list as the  
highest known  
quantity of  
chromium.**

**Cajun Tuna Steaks**

4 tuna steaks  
 ½ teaspoon cracked black pepper  
 ½ teaspoon coarse sea salt  
 1 tablespoon fenugreek  
 ½ teaspoon cayenne pepper or chilli powder  
 1 tablespoon turmeric  
 1 teaspoon cumin  
 1 tablespoon sweet red paprika  
 2 tablespoons rice flour  
 1 teaspoon coriander powder  
 1 tablespoon finely chopped parsley  
 oil

In a flattish bowl mix together all dry ingredients. Place the tuna steaks one by one in the spice bowl, pressing down firmly to ensure they are totally coated. Place on a plate until you need them. These steaks can be barbecued, panfried or grilled. Heat a little oil in your pan or grill, then fry each side for 3-5 minutes until very lightly blackened.

Serve with potatoes, rice, polenta or anything relatively bland to contrast with this spicy taste sensation. Other types of fish can be substituted if preferred; tofu also tastes wonderful when prepared in this way.

**Baked Berry Delish**

3 punnets summer berries  
 3 egg yolks  
 3 cups soymilk  
 1 vanilla bean  
 1 tablespoon rice flour  
 1 teaspoon cinnamon  
 2 tablespoons honey (or equivalent 100 per cent maple syrup)  
 3 tablespoons flaked almonds

In a small bowl whisk together the egg yolks and honey, then add the flour. In a saucepan heat the soymilk with the vanilla bean. Just before the milk comes to the boil take it off the heat and add to the egg mixture. Stir well before returning to the saucepan. Bring to the boil then, stirring constantly, simmer for 2-3 minutes. Remove the vanilla bean. Place berries in a baking dish, cover with the custard mixture and sprinkle with the cinnamon and flaked almonds. Bake in a pre-heated oven at 180 degrees for 20-30 minutes or until lightly golden.

References available on request.