Herbs and diabetes

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Mankind has used herbal remedies for millennia. Humans are not the only species to use herbs. Many animals appear to do so, for example monkeys, pigs, and elephants. Ethiopian baboons exposed to schistosomiasis eat Balanites fruits, which are rich in dioxigenin, a potent antischistosome, while those living in other areas do not. Some birds add greenery to their nests. European starlings choose yarrow (Achillea millefolium). When yarrow was added to the nests of tree swallows (which do not use greenery), fewer fleas were found after fledging compared with non-yarrow nests.

Hundreds of herbal remedies have been claimed to have benefit in diabetes care (Box 1). A Google search for ‘herbs + diabetes’ found about 58,900,000 results including claims that herbal treatment can cure diabetes. People want to believe this. The Times of India recently described fenugreek as ‘A magical kitchen ingredient that can cure diabetes’. Fenugreek (Trigonella foenum graecum) is used widely in cooking and herbal medicine in India, Africa and the Mediterranean. In the 10th century Avicenna treated diabetes with powders of fenugreek, lupin, and wormseed. Clinical trials of fenugreek are small; most are uncontrolled. They suggest that fenugreek lowers blood glucose, possibly by increasing dietary fibre. Rat studies showed changes in exocrine pancreatic function. Fenugreek seed powder also reduced lipids in people with type 2 diabetes.

TimesNow describes ‘How to cure diabetes with using bitter gourd leaves’. Momordica charantia (bitter gourd, bitter melon, bitter apple, bitter squash, balsam-pea, or karela) has a warty cucumber-like fruit. It grows in Asia where it is often used in cooking. Small studies in animals and humans have shown improved glucose tolerance, and reduced blood glucose. The mechanism is unclear but it does not increase insulin secretion. An aqueous extract of the fruit appears most effective. The round bitter melon (Citrullus lanatus) of Australia and South Africa is a different plant.

‘In this video you will come to know about a magical herb which is highly beneficial for treating Diabetes the natural / Herbal way.’ The ‘magical herb’ was banaba. Lagerstroemia speciosa (banaba, giant crepe-myrtle, Queen’s crepe-myrtle, or pride of India) grows in India, the Philippines and South East Asia. Banaba leaf extract lowers glucose and improves lipids and weight. The hypoglycaemic effect is attributed to corosolic acid and ellagitannins. Lactic acidosis associated with acute kidney injury followed banaba use by one patient.

Galega officinalis is an old herbal remedy. Common names are goat’s rue, French lilac, Italian fitch, Spanish sainfoin, and professor weed. In 1772 John Hill advocated it for treating thirst and frequent urination. Later G. officinalis was found to contain guanidine and similar compounds. In the early 20th century guanidine derivatives were found to lower glucose but usage lapsed because of toxicity and the introduction of insulin. A French physician, Jean Sterne, re-started research into guanidine-related products. After much effort he discovered that the biguanides were effective and safer. He established clinical use of metformin in people.

Box 1. Some herbal remedies for diabetes. Plants often have multiple common names, which may be applied to different species in different localities; species names vary in different sources. None of these plants can be recommended for diabetes care as there is insufficient evidence to confirm safe clinical efficacy.

- Achiote (Bixa orellana)
- Aloe vera (Aloe barbadensis)
- Banaba (Lagerstroemia speciosa)
- Berberis (Berberis vulgaris)
- Bitter melon (Momordica charantia)
- Bitterwood (Quassia amara)
- Black-jack (Bidens pilosa)
- Blueberry (Vaccinium myrtillus)
- Boswellia (Boswellia serrata)
- Bougainvillea (Bougainvillea spectabilis)
- Brazilian wood (Caesalpinia sappan)
- Buddleia (Buddleia officinalis)
- Burdock (Arctium lappa)
- Caper bush (Capparis spinosa)
- Chamomile (Matricaria chamomilla)
- Chard (Beta vulgaris)
- Chili (Capsicum annum)
- Chinese trumpet vine (Campsis grandiflora)
- Cinnamon (Cinnamomum spp.)
- Collard greens (Brassica oleracea)
- Curry leaves (Murraya koenigi)
- Dandelion (Taraxacum officinale)
- Evening primrose oil (Oenothera biennis)
- Fenugreek (Trigonella foenum graecum)
- Fig leaves (Ficus carica)
- Flame of the forest (Butea monosperma)
- Garlic (Allium sativum)
- Ginger (Zingiber officinale)
- Ginkgo (Ginkgo biloba)
- Ginseng (Panax spp. and Eleutherococcus senticosus)
- Goat’s rue (Galega officinalis)
- Gymnema (Gymnema sylvestre)
- Hamula (Erythrina griffithii)
- Hawthorn (Crataegus pinnatifida)
- Hogweed (Boerhaavia diffusa)
- Holy basil (Ocimum sanctum)
- Indian gooseberry (Eugenia jambolana)
- Indian kino (Pterocarpus marsupium)
- Indian mustard (Brassica juncea)
- Ivy gourd (Coccinia indica)
- Jack bean (Canavalia ensiformis)
- Mediterranean saltbush (Atriplex halimus)
- Milk thistle (Silybum marianum)
- Pigeon pea (Cajanus cajan)
- Porankonti (Salacia oblonga/Salacia reticulata)
- Prickly pear cactus (Opuntia dillenii)
- Okra (Abelmoschus esculentus)
- Olive leaves (Olea europaea)
- Onion (Allium cepa)
- Papaya (Carica papaya)
- Sesame oil (Sesamum indicum)
- Shatterstone (Phyllanthus niruri/amarnus)
- Silk cotton tree (Ceiba pentandra)
- Tea (Camellia sinensis)
- Turmeric (Curcuma longa)
- White mulberry leaves (Morus alba)
- White woodwoof (Artemisia herba-alba)
- Yellow nicker nut (Caesalpinia bonduc)
- Yellow trumpet bush (Tecoma stans)
with diabetes, published in 1957, and christened the drug Glucophage. Nowadays, metformin is the most common diabetes drug prescribed in England with over 20 million items a year.14

Many other medicines have their origins in herbal remedies. Medicines are thoroughly tested for efficacy and safety, and regulated. All carefully measured components are known. There is minimal batch-to-batch variation. Over-the-counter or out-of-the-ground herbal remedies contain many unknowns (including picking the wrong plant). Active component(s) are mixed with other compounds. The dose is influenced by the part of the plant used, location, climate, plant age, picking, processing, storage, and additions to the mix. Each batch varies. Studying such mixtures of unknowns is challenging and not often attempted at all or on sufficient numbers.15 This is a pity as many useful drugs are surely waiting to be found.

Patients commonly use complementary and alternative medicine (CAM). In England in 2005, 44.0% had ever used CAM, and 26.3% had used it in the past 12 months. Twenty-nine percent of people taking prescription drugs had used CAM in the past 12 months. The most common therapies were massage, aromatherapy and acupuncture.16

One review estimated that between 17 and 72.8% of people with diabetes use alternative medicine. The most frequently used treatments were nutritional supplements and advice, herbal remedies, spiritual healing and relaxation.17 Herbal remedies may interact with prescribed medication, including glucose-lowering drugs, risking hypoglycaemia. Aloe vera adds to the glucose-lowering effect of glibenclamide, pioglitazone, and repaglinide. Karela increases the glucose-lowering effect of metformin, glymidine, and glibenclamide.18 Karela extract was added to half the maximum dose of metformin or glibenclamide in people with type 2 diabetes and the effect exceeded that of the maximum dose of these drugs without karela.19 Prickly pear increased glucose-lowering by glipizide and metformin. A Mexican man with type 2 diabetes on metformin and glipizide had a recent HbA1c of 6.7% (49.7mmol/mol) without hypoglycaemia. Then he had four hypoglycaemic episodes. His glipizide was stopped. The hypos stopped. He later admitted to eating prickly pear cactus in addition to his medication.20

‘Diabetes UK does not recommend the use of herbal remedies and supplements as there is not enough evidence that they are safe and effective for people with diabetes to use.’21 I agree. But our patients will continue to take herbal remedies with or without health care professional approval so it is important to ask about CAM in a non-judgemental way so that patient and professional can work together to create safe diabetes care.

Summary

• People with diabetes often use complementary or alternative medicine including herbal remedies or nutritional additives.
• Patients may take herbs in addition to prescribed medication.
• Combining herbal remedies with prescribed medication may produce interactions. While the effect might be beneficial, for example enhanced hypoglycaemic effects, the results are unpredictable and hypoglycaemia may ensue. Other interactions could be harmful.
• Patients may be reluctant to tell their doctor or nurse about their alternative treatments for fear of disapproval.
• Ask about alternative treatments and herbal or nutritional additives in a non-judgemental way. You need the full facts to care for patients properly and safely.
• Metformin was discovered by studying the glucose-lowering effects of goat’s rue, G. officinalis, and creating a safe related compound. Metformin is now the most common diabetes drugs used in the UK.
• Other safe and useful drugs are waiting to be discovered in the plant kingdom.

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References