NATURAL REMEDIES USEFUL IN THE ADJUNCTIVE TREATMENT OF DIABETES

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GOALS AND OBJECTIVES

› GOALS
  – To provide unbiased, accurate and scientifically based information on natural remedies useful in the adjunctive treatment of diabetes.

› OBJECTIVES
  – At the completion of this lecture, the attendee will be well equipped to recommend specific natural remedies, doses, and benefit risk ratios to patients interested in natural products useful in the adjunctive treatment of diabetes.
DOC HARVI’S RULES FOR NATURAL REMEDIES

1. Do no harm!
2. Never combine the herbs.
3. Never recommend natural products to women who are pregnant or lactating and children who are two years old or younger.
4. Always tell patients there is not any regulation of these products by the Food and Drug Administration.
5. Advise all patients to consult their healthcare team before taking herbal or natural remedies.
### Natural Remedies Which Historically Have Been Used to Treat Diabetes and Hyperglycemia

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AFRICAN MINT
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› Common name: American basil
› Uses: soil phytopathogens, mosquito repellent, anti-inflammatory, chemotherapeutic, and antidiabetic activity
› Diabetes: Animal data only—decreased weight gain, lowering of fasting blood glucose levels and facilitated glucose induced insulin release from pancreatic beta islet cells
› Dosing: Manufacturers guidelines.
› Contraindications: Hypersensitivity.
› Pregnancy/lactation: No data
AFRICAN MINT

› Interactions: None, well documented.
› Adverse reactions: abdominal discomfort, flatulence, constipation
› Toxicology: Estragole, a carcinogen
ALPHA-LIPOIC ACID
ALPHA-LIPOIC ACID (ALA)

› Common names: lipoic acid, thoctic acid, lipoicin, thioctan

› Uses: antioxidant in diabetes and HIV, cancer, liver ailments and numerous others

› Diabetes: In both Type 1 and 2 diabetes, preventing various pathologies—reprofusion injury, macular degeneration, cataracts and neuropathy
  
  – Clinical data: Metabolic clearance rate for glucose rose 50%, improves blood flow to peripheral nerves and stimulates the regeneration of nerve fibers

› Dosing: 300-800mg/day IV or po
ALPHA LIPOIC ACID (ALA)

› Contraindications: No data
› Pregnancy/lactation: Avoid use
› Interactions: Use may require a reduction of insulin or oral hypoglycemic agents.
› Adverse reactions: None have been reported even with large doses or extended use.
› Toxicology: LD 50 of ALA is 400-500mg/kg/day in dogs.
BANABA
Common names: queen’s flower, pride of India
Uses: Folk medicinal use in diabetes.
Diabetes: Corosolic acid constituent was shown to be a glucose transport activator and to have inhibitory effects on post-prandial hyperglycemia.
- Clinical data: Twenty grams of old leaves or fruits dried for 1-2 weeks had hypoglycemic activity equivalent to 6-7.7 units of insulin.
BANABA

- Animal data: Studies suggest corosolic acid 1% (glucosol), to be beneficial in controlling hyperglycemia in NIDM.

- Human data: Type 2 diabetic patients showed significant reduction in blood glucose levels with 32 and 48mg of corosolic acid po q day for 2 weeks. Soft gelatin capsule showed better bioavailability.

- Dosing: 32 and 48mg of banaba extract standardized to 1% corosolic acid, glucosol.

- Contraindications: None well documented
BANABA

› Pregnancy/lactation: Avoid use.
› Interactions: Caution is advised when combining use with other antidiabetic medication. Effects could be additive.
› Adverse reactions: None well documented.
› Toxicology: Large oral doses produce no toxic effects or consulsions.
BITTER MELON
BITTER MELON

› Common names: balsam pear/apple, bitter cucumber, cerasee
› Uses: hypoglycemic, antimicrobial, antifertility
› Hypoglycemic properties: Reduction of blood glucose and improvement of glucose tolerance are the mechanisms by which the plant, including fruit, seeds and tissues, exerts its actions.
  - Animal data: Studies in rats included improvement of glucose tolerance and sustained decreases in blood glucose levels 15 days after discontinuation. Suggesting the involvement of viable beta cells.
  - Clinical data: Bitter melon improved glucose tolerance in humans. Clinical trials involving using the fresh fruit juice in 160 patients controlled diabetes.
BITTER MELON

› Dosing: Juice, 50-100ml/day. 900mg of fruit TID
› Contraindications: None.
› Pregnancy/lactation: Avoid use. May induce abortion.
› Interactions: Hypoglycemic agents, protease inhibitors
› Adverse reactions: Hypoglycemia
› Toxicology: The red arlis around bitter melon seeds are toxic to children.
CHROMIUM
CHROMIUM

› Common names: Brewers yeast, chromium chloride, nicotinate or picolinate

› Uses: Diabetes and weight loss.

› Diabetes: The FDA has concluded that based on very limited credible evidence chromium picolinate may reduce the risk of insulin resistance and therefore may reduce the risk of Type 2 diabetes.

› Dosing: Current RDA is 25mcg/day for women and 35mcg/day for men. NOTE: At higher doses (100mcg/day) the potential for genotoxic effects outweigh the benefit.
CHROMIUM

› Pregnancy/lactation: Avoid use. Mice fed chromium picolinate showed offspring with skeletal and neurological defects.

› Interactions: None well documented.

› Adverse reactions: GI irritation/ulcers, dermatitis, hemorrhage, circulatory shock, renal tubular damage.

› Toxicology: No risk of genotoxicity at low dosages over the short term exists for chromium.
EVENING PRIMROSE
EVENING PRIMROSE OIL

› Common names: evening primrose, common evening primrose

› Uses: rheumatoid arthritis, diabetic neuropathy

› Diabetic neuropathy: Review of three trials suggest evening primrose oil might improve symptoms of diabetic neuropathy. Gamma-linoleic acid (GLA) doses ranged from 360-480mg/day.

› Dosing: Adults, 6-8g/day. Children, 2-4g/day. The content of GLA in the oil is 8-10%.

› Contraindications: None have been identified.
Pregnancy/lactation: Avoid use. NOTE: Both linoleum and GLA are present in breast milk.

Interactions: None.

Adverse reactions: May lower seizure threshold in epileptic patients.

Toxicology: No toxicity, carcinogenicity, nor teratogenicity has been reported.
FENUGREEK
FENUGREEK

› Common names: Fenugreek, methi

› Uses: hypercholesterolemia, diabetes

› Glucose lowering effect: The soluble fiber fraction of the seeds may be responsible for the antidiabetic activity. Fenugreek also contains 4-hydroxyisoleucine (0.55%), which causes direct pancreatic beta cell stimulation.

› Animal data: The defatted fraction of the seeds lowered blood glucose levels, plasma glucagons, and somatostatin levels; carbohydrate induced hyperglycemia was also reduced.
FENUGREEK

› Clinical data: Glycemic control was improved in a small study of patients with mild Type 2 diabetes.

› Dosing: 5g/day of seeds or 1g/day of a hydroalcoholic extract of fenugreek.

› Pregnancy/lactation: Avoid use. Fenugreek can cause uterine stimulation.

› Interactions: The effects of Warfarin may be potentiated.

› Adverse reactions: Well tolerated. Dyspepsia and mild abdominal distention.

› Toxicology: Hypoglycemia.
GINSENG
GINSENG

› Common names: ginseng, five fingers, red ginseng

› Uses: adaptogenic, antineoplastic, immunomodulatory, cardiovascular, CNS, endocrine and ergogenic effects

› Clinical data for endocrine effects: One study reported statistically significant (P<0.01) improvement in fasting blood glucose and reduction in glycosylated hemoglobin in subjects with Type 2 diabetes treated for 8 weeks with 100 and 200mg, respectfully. Two studies have shown that 3g of ground Panax quinquefolius root exerts a glucose lowering effect postprandial or when stimulated by glucose ingestion.
Dosing: Ginseng root is standardized on content of ginsenosides, which should be greater than 1.5%. Crude root dosage of 0.5 to 3g/day. American ginseng (CVT-E200) was dosed at 400mg po q day for 4 months or 200mg bid for 2-3 months.

Contraindications: Hypersensitivity. Patients taking warfarin, loop diuretics or phenelzine. Patients with high blood pressure. Use should be avoided in autoimmune diseases, asthma, or eczema.

Interactions: Decreases the effects of furosemide and warfarin. Increases the effects of nifedipine and phenelzine.

Adverse reactions: abdominal pain, confusion, diuresis, dizziness, drowsiness, headache, insomnia, joint pain, reduced BP, and vomiting.

Toxicology: No information.
GOTU KOLA
GOTU KOLA

› Common names: Gotu kola, Indian/Asian pennywort, spade leaf

› Uses: Treating wounds, varicose veins, skin disorders, venous insufficiency, enhance memory and as an aphrodisiac.

› Diabetic microangiopathy: In patients receiving the total triterpene fraction of Centella asiatica (TTFCA), microcirculation improved when compared to placebo or no treatment.

› Dosing: TTFCA 60mg po tid.
GOTU KOLA

- Contraindications: Hypersensitivity
- Pregnancy/lactation: Avoid use, emmenagogue effects.
- Interactions: Animal studies showed a decrease in serum levels of phenytoin, valproate and gabapentin; as well as comparable activity to Viagra and Pepcid.
- Adverse reactions: Contact dermatitis
- Toxicology: Hepatotoxicity.
Common name: onion

Uses: Antimicrobial, cardiovascular, hypoglycemic, antioxidant/anticancer, asthma, bronchitis, whooping cough, stingray wounds, warts, acne, appetite loss, urinary tract disorders, and indigestion.

Diabetes

- Animal data: Ten years of studies in diabetic rats have confirmed the hypoglycemic effect of onion. The onion aminoacid, s-methyl cysteine, contributed to the antidiabetic effects comparable to insulin.
- Clinical data: Many articles describe the benefit of onions in improving blood glucose levels.
ONION

› Dosing: 50g of fresh onions, the juice of 50 g of fresh onion or 20g dried onion

› Pregnancy/lactation: Recognized safe when used as food.

› Interactions: None.

› Adverse reactions: Corneal swelling.

› Toxicity: The reputed toxicity of large doses of onions is unresolved.
PRICKLY PEAR
Common names: prickly pear, nopal (stem sections of plant), tuna (meaning fruit of seed)

Uses: diabetes, burns, lipid disorders, inflammation and ulcers

Diabetes: Polysaccharides may be responsible for the plants (Optuna species) hypoglycemic actions.

- Animal data: Blood glucose levels and glycated hemoglobin levels were maintained after insulin was discontinued. O. megacantha was nephrotoxic while O. fuliginosa was not.
- Clinical data: The hypoglycemic effect of Optuna species are documented in numerous studies. Decrease glucose and insulin levels were observed.
Dosing: Two 250mg capsuled tid or q8h.

Contraindications: Hypersensitivity.

Pregnancy/lactation: Avoid use.

Interactions: May increase hypoglycemia when used with other antidiabetic agents. May increase diuresis when used with diuretics.

Adverse reactions: Dermatitis, rarely granuloma formation.
SWEET POTATO
Common names: sweet potato, caiapo, yam, camote

Uses: antidiabetic, antihypertensive, anti-inflammatory, antimicrobial and antioxidant

Diabetes:
- Animal data: Oral doses of white skin sweet potato (WSSP) caused a reduction of hyperinsulinemia and inhibited increases in blood sugar. Histology showed regranulation of pancreatic islet beta cells.
  - The production of adiponectin from transgenic sweet potatoes has gained pharmaceutical interest. Low levels of this cytokine are associated with Type 2 diabetes, obesity and hypertension.
Clinical data: Caiapo, an extract of WSSP, improves glucose tolerance by reducing insulin resistance.

Dosing: Clinical trials used 4 tablets daily of the nutraceutical, caiapo containing either 168mg or 336mg. Commercially available capsules are dosed at 2 po tid before meals.

Contraindications: Hypersensitivity (urticaria, hypotension, and edema of the hands/feet)

Pregnancy/lactation: Avoid use.
SWEET POTATO

› Adverse reactions: No serious reactions have been reported historically or clinically.

› Toxicology: Sesquiterpenoids in sweet potatoes have a medium lethal dose from 185-266mg/kg in animals. No human data is available.
THE END