

Latest Evidence-Based Research on Diabetes

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Diabetes mellitus is one of the most studied ailments of the 21st century. However, as the number of people suffering from type 2 diabetes has grown exponentially more research is being conducted not only to determine a direct cause(s), but also allopathic and complementary and alternative medicine (CAM) treatment options. This article aims to highlight the latest news and evidence-based research on type 2 diabetes. It will highlight research on weight loss surgery, intermittent fasting, and traditional Chinese medicinal (TCM) herbal remedies.

Bariatric Surgery

Over 50 years ago the University of Minnesota performed the first weight loss surgery, which sought to alter the stomach and digestive tract of morbidly obese individuals to reduce caloric intake and induce rapid weight loss. In the last half of a century improvements on procedure, surgery, and post-surgery nutrition has inspired the field. One major finding to come out of that allopathic research is that weight loss surgery can result in type 2 diabetes remission within days of surgery. In 2007, the world health organization published guidelines for the surgical treatment of type 2 diabetes (Schauer, P. R., Mingrone, G., Ikramuddin, S., & Wolfe, B., 2016). A meta-analysis of 11 clinical trials has shown that bariatric surgery to be superior to medical management of type 2 diabetes at achieving remission or glycemic improvement. I think that the implication of this research is interesting from a CAM perspective. First, a CAM provider may find themselves supporting clients who have undertaken this type of surgery to improve their management of type 2 diabetes, but also their overall cardiovascular health and weight management. Second, this is an area worth keeping an eye on for potentially identifying the exact mechanism which increases the physiological change in the body's ability to maintain glucose homeostasis.

Intermittent Fasting

Intermittent fasting and its metabolic effects are the most recent news flash to hit the diabetic research community. A review of research by Patterson and Sears (2017) detailed the following talking points (page 386-387):

1. Studies in rodents and other nocturnal mammals support the hypothesis that intermittent fasting and restricting the availability of food to the normal nighttime feeding cycle improve metabolic profiles and reduce the risks of obesity and obesity-related conditions, such as nonalcoholic fatty liver disease, and chronic diseases, such as diabetes and cancer. However, data from related human studies are limited regarding the positive impacts of time-restricted feeding (i.e., eating patterns aligned with normal circadian rhythms) on weight or metabolic health.
2. Overall, evidence suggests that intermittent fasting regimens are not harmful physically or mentally (i.e., in terms of mood) in healthy, normal weight, overweight, or obese adults.

3. It appears that almost any intermittent fasting regimen can result in some weight loss. Among the 16 intervention trials included in this review, 11 reported statistically significant weight loss.
4. Alternate-day fasting appeared to result in weight loss, as well as reductions in glucose and insulin concentrations, in the three studies evaluating this regimen. However, this fasting regimen may not be practical because it leads to intense hunger on fasting days. Modified alternate-day fasting regimens result in reduced weight, with reductions ranging from 3.2%, in comparison with a control group (10) during a 12-week period, to 8.0%, in a one-arm trial during an 8-week period (57). There was limited and mixed evidence for reductions in insulin concentrations, improvements in lipids, or reductions in inflammatory factors.
5. Research has not demonstrated that alternate-day fasting regimens produce superior weight loss in comparison to standard, continuous calorie restriction weight-loss plans.
6. There are considerable observational data on various forms of religious fasting, most of which suggest that these regimens result in transitory weight loss and have mixed impacts on other biomarkers.
7. Data are lacking regarding the impacts of intermittent fasting on other health behaviors, such as diet, sleep, and physical activity.
8. There are limited data linking intermittent fasting regimens with clinical outcomes, such as diabetes, cardiovascular disease, cancer, or other chronic diseases, such as Alzheimer's disease.

Due to the excitement around this approach and the mixed results in research, I expect to see more research about the metabolic effects of intermittent fasting in the near future. This research area is ripe for data on herbal clients who may want to try an intermittent fasting regime to improve their glucose control and to lose weight.

Natural Health Products and TCM remedies

There have been a number of natural health products (NHP) have been evaluated for their effect on the progression of type 2 diabetes and management of the disease. There is strong evidence (double-blind, placebo-controlled trial of 12-month duration) that Tianqi, a TCM remedy made up of 10 traditional Chinese medicinal herbs, can reduce the progression of pre-diabetes to type 2 diabetes by 32% (Grossman, Roscoe, & Shack, 2018). In addition, a number of western, Ayurveda, and TCM medicinal herbs have been shown to reduce glycated hemoglobin (A1C) at least 0.5% in randomized controlled trials (Grossman, Roscoe, & Shack, 2018; Arumugam, Manjula, Paari, 2013; Choudhury et al., 2018). "The landmark UKPDS trial showed that a -1.0% A1c improvement is associated with a reduction of diabetes-related complications and deaths. Kumar et al., 2018)" The formulations or some combination of the herbs listed below may help type 2 diabetics achieve enough of an A1c reduction to achieve these benefits.

List of Medicine Herbs (and formulations) which have shown to reduce A1C by 0.5% (Grossman, Roscoe, Shack, 2018, p. 155)

- Ayurveda polyherbal formulation
- *Citrullus colocynthis*
- *Coccinia cordifolia*
- Eicosapentaenoic acid

- *Ganoderma lucidum*
- Ginger (*Zingiber officinale*)
- *Gynostemma pentaphyllum*
- *Hintonia latiflora*
- Lichen genus *Cladonia* BAFS “Yagel-Detox”
- Marine collagen peptides
- Nettle (*Urtica dioica*)
- Oral aloe vera
- *Pterocarpus marsupium* (vijayasar)
- *Salacia reticulata*
- *Scoparia dulcis* porridge
- Silymarin
- Soybean-derived pinitol extract
- Touchi soybean extract
- *Trigonella foenum-graecum* (fenugreek)
- Traditional Chinese medicine herbs (and formulations):
 - Berberine
 - Fructus Mume
 - Gegen Qinlian Decoction (GQD)
 - Jianyutangang (JYTK) with metformin
 - Jinlida with metformin (41) • Sancaijiangtang
 - Shen-Qi-Formula (SQF) with insulin
 - Tang-Min-Ling-Wan (TM81)
 - Xiaoke (contains glyburide)
 - Zishentongluo (ZSTL)

References

- Arumugam, G. Manjula, P., & Paari, N. (2013) A review: Anti diabetic medicinal plants used for Diabetes. *Journal of Acute Disease* p. 196-200.
- Choudhury, H., Pandey, M., Hua, CK, Mun, CS, Jing, JK, Kong, L, Ern, LY, Ashraf, NK, Kit, SW, Yee, TS, Pichika, MR, Gorain, B, Kwsharwani, P (2018) An update on natural compounds in the remedy of diabetes mellitus: a systematic review. *Journal of Traditional and Complementary Medicine* 8: 361-376.
- Grossman, LD., Roscoe, R., Shack, AR (2018) Complementary and Alternative Medicine for Diabetes. *Canadian Journal of Diabetes*, 42: 154 - S161
- Kurmar, S., Moseson, H., Uppal, J., Obsom, C., Heyman, M., Juusola, J., (2018) Impact of Diabetes Mobile App with In-App Coaching on Glycemic Control. *Abstract for the 77th American Diabetes Association Scientific Sessions 2018*. Access from URL: <https://evidation.com/wp-content/uploads/2017/10/impact-of-a-diabetes-mobile-app-with-in-app-coaching-on-glycemic-control.pdf>
- Patterson, RE & Sears, DD (2017) Metabolic effects of intermittent fasting. *Annual Review of Nutrition* 37: 371-393.
- Schauer, P. R., Mingrone, G., Ikramuddin, S., & Wolfe, B. (2016). Clinical Outcomes of Metabolic Surgery: Efficacy of Glycemic Control, Weight Loss, and Remission of Diabetes. *Diabetes care*, 39(6), 902–911. doi:10.2337/dc16-0382