The American Diabetes Association (ADA) defines prediabetes as having a hemoglobin (Hgb) A1C between 5.7% and 6.4%. Ginger root is used as a medicinal herb to treat nausea and vomiting, gastrointestinal irritation, inflammation and pain. Ginger root is also reportedly used as an alternative for treating diabetes and has been found to decrease the Hgb A1C by 0.8% in a previous study. However, its efficacy on glycated Hgb has not been fully elucidated in clinical trials. Although the exact mechanism of ginger root in diabetes is unknown, there are several mechanisms discovered that may attribute to its ability to decrease A1C:

- Decreases carbohydrate metabolism associated with hyperglycemia by inhibiting the key carbohydrate enzymes, alpha-amylase and alpha-glucosidase. This inhibition is facilitated by gingerol and shogaol which are the primary components of ginger (Figure 1).
- Protective effect on pancreatic beta-cells causing an increase in plasma insulin levels.
- Decreasing blood glucose by increasing translocation of glucose-transporter type 4 (GLUT-4) to the muscle cell plasma membrane surface.

We report the case of a patient with prediabetes that supplemented with ginger root for an elevated Hgb A1C.

The patient was a 47-year-old Caucasian male who weighed 97 kg with a family history of diabetes and no significant past medical history. The patient began taking extended-release metformin 500 mg twice daily for over 16 months, reaching prediabetic status. After four months of metformin monotherapy, the patient’s Hgb A1C decreased by 0.1%, resulting in a Hgb A1C of 6.1%. The patient then initiated OTC ginger root supplementation as an alternative to decreasing Hgb A1C. Further studies are warranted in order to evaluate the efficacy of ginger root in decreasing Hgb A1C.

After four months of metformin monotherapy, the patient’s Hgb A1C decreased by 0.1%, resulting in a Hgb A1C of 6.1%. The patient then initiated OTC ginger root 1,100 mg twice daily along with the metformin at the current dose. After four months of combination therapy with metformin and ginger root, the patient’s Hgb A1C decreased by 0.6% to 5.5%, an absolute decrease of 1.6%. This case has provided evidence suggesting that oral ginger root supplementation may be effective in decreasing Hgb A1C in patients with prediabetes who are prescribed metformin.

The patient reported the gradual increase in fasting blood glucose that ranged from 108 to 124 mg/dL with an increasing Hgb A1C ranging from 5.6 to 6.2% over 16 months, reaching prediabetic status. The patient was prescribed extended-release metformin 500 mg twice daily for four months. During this time period, the patient was self-reportedly compliant and had implemented lifestyle modifications including dieting and exercising.

Figure 2. Change in Hgb A1C

Conclusions:

- Metformin has been used as a first-line medication for the treatment of diabetes along with lifestyle and diet modifications according to the ADA. This combination typically decreases the Hgb A1C by an absolute value of 1 to 2%.
- The reduction in Hgb A1C seen is consistent with previously published data on the efficacy of ginger root in diabetic patients. It appears that ginger root likely contributed to the decrease in Hgb A1C along with metformin in this patient case.
- Currently, the ADA guidelines do not recommend ginger root supplementation as an alternative to decreasing Hgb A1C. Further studies are warranted in order to evaluate the efficacy of ginger root in decreasing Hgb A1C.

References: