Assessment of Intake of Cinnamon Supplements on Hemoglobin A1c Levels In Pre-Diabetics

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ABSTRACT

Cinnamon often is used in attempts to lower blood sugar levels, however, previously published research suggests conflicting results of its usefulness. Many individuals who are pre-diabetic will eventually develop type 2 diabetes within 10 years. Hemoglobin A1c blood test (HbA1c) reflects average blood sugar levels in the past two to three months. Pre-diabetic individuals have HbA1c levels equal or higher than 5.7 percent. In this study, we investigated whether cinnamon supplements would affect HbA1c levels in the treatment group as compared to the control group. In addition to HbA1c levels, body mass index (BMI) and percent body fat (PBF) of subjects in the treatment and control group were determined. Participants in the treatment group (30 pre-diabetic individuals, ages 18-70 years) received two capsules of 500 mg cinnamon daily while the control group (22 pre-diabetic individuals, ages 18-70 years) did not receive any cinnamon supplements for the duration of the study. Thirty-three subjects completed the study at the end of ten weeks (20 subjects in the treatment group and 13 subjects in the control group). Due to the study's small sample size, Mann-Whitney U test for two independent groups was used and indicated that there were no statistically significant differences between the treatment and the control groups based on: HbA1c levels U = 123.50, p = .810; BMI U = 112, p = .507; and PBF U = 119, p = .685. The data in this pilot study warrant larger studies in the future to determine the benefits of cinnamon supplements in lowering HbA1c levels in pre-diabetics.

INTRODUCTION

* Diabetes Mellitus: characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both.[1] Chronic complications of uncontrolled blood sugar in diabetic patients lead to increased risk for damage to heart, kidneys, eyes, peripheral nerves, blood vessels, eye, foot, and hearing.[2] There are generally two types of diabetes mellitus: Type 1, insulin-dependent, and Type 2, non-insulin dependent.

* Type 2 diabetes is more common and is found in patients who are overweight or obese or have an increased percentage of body fat distribution in the abdominal region.[1]

* Pre-diabetes Mellitus is a condition in which blood sugar levels are higher than normal but not as high as in diabetic patients. It is estimated that many individuals who are pre-diabetic will eventually develop type 2 diabetes within 10 years.

* HbA1c, is the most reliable blood test for determining blood sugar levels because it is not subject to daily fluctuations based on immediate diet prior to the testing. HbA1c measures the average blood sugar levels in the past 3 months.[4]

* Cinnamon has been shown to be as a natural insulin sensitizer in lowering blood sugar levels.[5]

* Therefore, we investigated the possible effect of cinnamon on HbA1c levels.in pre-diabetics. In addition, anthropometric measurements such as BMI and PBF of the subjects were determined.

MATERIALS & METHODS

* A Total of 137 subjects were screened for pre-diabetic using DCA 2000 instrument. 30 pre-diabetic subjects were placed in the treatment group (22 completed the study) while 22 pre-diabetic subjects were placed in the control group (13 completed the study) who did not receive any cinnamon supplements.

* Subjects in the treatment group took Nature Made® 1000 mg cinnamon supplements daily for 10 weeks.

* Anthropometric measurements, such as BMI and PBF, were taken using Tanita scale.

RESULTS

* The data of 33 subjects, who were determined to be pre-diabetic (HbA1c <5.7) and completed the study, were used for the statistical analysis using Mann-Whitney U test for two independent groups.

* The initial results of mean Hb1c for the treatment group was 5.88 (SD=.21) while for the control was 5.83 (SD=.14); The final results of mean HbA1c for the treatment group was 5.74 (SD=.39) and for the control group was 5.68 (SD=.27).

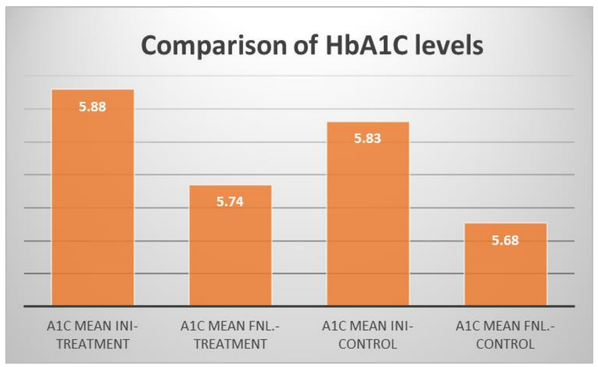

Figure 1: Levels of HbA1c between treatment and control group.

* The initial results of mean BMI for the treatment group was 31.15 (SD=8.13) while for the control was 32.49(SD=7.40); The final results of mean BMI for the treatment group was 31.03 (SD=7.98) and for the

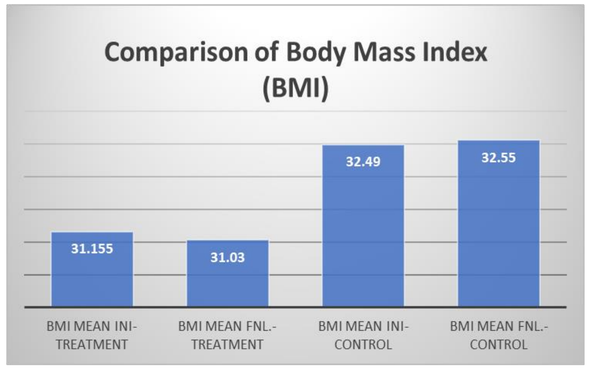

Figure 2: Levels of BMI between treatment and control group.

* The initial results of mean PBF for the treatment group was 34.1 (SD=11.03) while for the control was 38.3(SD=10.06); The final results of mean BMI for the treatment group was 35.28 (SD=10.86) and for the control group was 36.70 (SD=8.47).

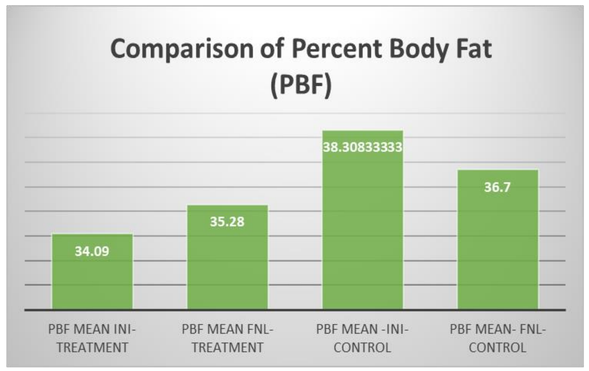

Figure 3: Levels of PBF between treatment and control group

* Due to the study's sample size, employment of non-parametric Mann -Whitney U test for use with two independent groups indicated that there were no statistically significant differences between the treatment and the control groups based on: HbA1c levels U=123.50, p=.810; BMI U=112,p=.507; and PBF U=119, p=.685

DISCUSSION

* The effect of cinnamon supplements on Hemoglobin A1c levels were determined in this study. The results showed that there were no statistically significant differences between the treatment group who took cinnamon supplements versus the control group.

* In addition, there were no statistically significant differences between the treatment versus control group in regard to the anthropometric measurements for BMI and PBF.

CONCLUSION

* This project was a pilot study and future studies will be needed to determine whether intake of cinnamon supplements will reduce the HbA1c levels in pre-diabetic individuals.

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