Comparison of cinnamon extract to metformin effects upon insulin resistance, apolipoprotein B/apolipoprotein A1 ratio, and body mass index of obese adolescent girls with polycystic ovary syndrome: A double-blind, placebo-controlled trial

Shadab Salehpour, Susan Parsay, Samaneh Onsori, Somayeh Setavand
Department of Pediatric Endocrinology & Metabolism, SUMS

Abstract

Background: Polycystic ovary syndrome (PCOS) is one of the most common endocrinopathies, affecting 5-10% of population. Insulin resistance, apolipoprotein B/apolipoprotein A1 ratio, and body mass index commonly increase in obese PCO patients and are considered as: the indicators of the disease. On the other hand, metformin and cinnamon are generally believed to control these endocrinopathies.

Materials and Methods: In a prospective, double-blind, randomized, placebo-controlled clinical trial, 112 adolescent girls (12.6-17 years old) with PCOS were treated with cinnamon extract (500 mg twice daily), metformin (500 mg twice daily), or placebo, at the outpatient paediatric endocrine clinic of a university children’s hospital in Tehran for 1 year.

Results: Cinnamon and metformin differed from placebo in significantly decreasing insulin resistance: both homeostasis model insulin resistance index (p < 0.001) and quantitative insulin sensitivity check index (p < 0.01), and also apolipoprotein B/apolipoprotein A1 ratio. There was no significant difference between cinnamon and metformin effects on these indexes, however, both of them slightly but significantly decreased body mass index compared to placebo (p < 0.05).

Conclusion: Cinnamon administration can be considered as an effective treatment for reduction of insulin resistance and weight in obese adolescent girls with polycystic ovary syndrome.

Keywords: cinnamon, metformin, polycystic ovary syndrome

Methods

By random allocation 112 PCO girls were divided into 3 groups:
- cinnamon group: taking 500 mg cinnamon tablets twice daily
- metformin group: taking 500 mg metformin tablets twice daily
- control group: taking 500 mg placebo tablets twice daily

Each case was treated for two years.

Follow up:
- Every 3 months: Physical exam, Body Mass Index (BMI)
- Apolipoprotein B/apolipoprotein A1 ratio was measured before & after Rx
- Every 3 months insulin resistance indexes: Homeostasis Model Insulin Resistance Index (HOMA-IR) and Quantitative Insulin Sensitivity Check Index (QUICKI) were calculated.

Analysis

Data were analyzed by paired T-test, ANOVA, Tukey, Wilcoxon and Kruskal-Wallis tests using the SPSS program.

Results

- Cinnamon and metformin differed from placebo in significantly decreasing insulin resistance: both homeostasis model insulin resistance index (p < 0.001) and quantitative insulin sensitivity check index (p < 0.001)
- Cinnamon and metformin differed from placebo in significantly decreasing apolipoprotein B/apolipoprotein A1 ratio (p < 0.01).
- There was no significant difference between cinnamon and metformin effects on these indexes, however, both of them slightly but significantly decreased body mass index compared to placebo (p < 0.05).

Discussion/Conclusion

Cinnamon administration can be considered as an effective treatment for reduction of insulin resistance and weight in obese adolescent girls with polycystic ovary syndrome.