P.O. Box 144345 Austin, TX 78714-4345 ▪ 512.926.4900 ▪ Fax: 512.926.2345 ▪ www.herbalgram.org

HerbClip™

File: ■ Turmeric (*Curcuma longa*, Zingiberaceae)
■ Curcumin
■ Polycystic Ovary Syndrome

HC 122011-656

Date: January 15, 2021

RE: Curcumin Supplementation May Decrease Fasting Plasma Glucose and Dehydroepiandrosterone (DHEAS) in Women Diagnosed with Polycystic Ovary Syndrome

Heshmati J, Moini A, Sepidarkish M, et al. Effects of curcumin supplementation on blood glucose, insulin resistance, and androgens in patients with polycystic ovary syndrome: A randomized double-blind placebo-controlled clinical trial. *Phytomedicine*. January 2021;80:153395. doi: 10.1016/j.phymed.2020.153395.

Polycystic ovary syndrome (PCOS) is the leading cause of infertility among women of reproductive age. PCOS is an endocrine disorder characterized by polycystic ovarian morphology, androgen excess, insulin resistance, and chronic oligo-anovulation. The etiology remains largely unknown; however, it is suggested that insulin may play a critical role in the pathophysiology. Nutritional interventions have been shown to improve conditions of PCOS. As well, animal models have demonstrated curcumin to have beneficial impacts on PCOS. Curcumin is a polyphenolic compound derived from turmeric (*Curcuma longa*, Zingiberaceae) root. Curcumin has demonstrated antioxidant and anti-inflammatory properties. Studies have shown that curcumin improves insulin resistance by increasing oxidation of fatty acid and glucose. The purpose of this double-blind, placebo-controlled clinical trial was to determine the effects of curcumin on glycemic control and hormonal parameters in patients diagnosed with PCOS.

The study was conducted at the Arash Women's Hospital, Tehran University of Medical Sciences (Tehran, Iran) between October 1, 2018 and May 31, 2019. Patients were included between the ages of 18 and 49 years with a diagnosis of PCOS for at least two years, impaired glucose tolerance (IGT), use of only one of the metformin or clomiphene drug groups, and a body mass index (BMI) between 25 and 30 kg/m^2. Patients were excluded with other hormonal diseases/disorders, autoimmune or inflammatory diseases, cancer, infections, pregnancy or lactation, use of multivitamins or minerals and other nutritional supplements, use of anticoagulants, non-steroidal anti-inflammatory drugs, and spironolactone within one month preceding the trial. A total of 112 women were assessed for eligibility. Of those, 40 were excluded for not meeting inclusion criteria (n = 25), declining to participate (n = 8), and other reasons (n = 7). The remaining 72 patients were randomly assigned to the intervention (n = 36) or the placebo (n = 36)

groups. Two patients in the intervention were lost to follow-up (n = 1) and became pregnant (n = 1). Three patients in the placebo group were lost to immigration (n = 1), became pregnant (n = 1), and personal reasons (n = 1).

Curcumin and the placebo (maltodextrin) were prepared by KAREN Pharma (Yazd, Iran). Each capsule contained 500 mg. The capsules were similar in shape, size, smell, and color. Both groups were instructed to consume three capsules daily (1500 mg) for 12 weeks. Patients were instructed to maintain their normal lifestyle, including physical activity and PCOS diet.

Primary outcomes of the study included changes in fasting plasma glucose (FPG), fasting insulin (FI), sex hormones (estradiol, dehydroepiandrosterone [DHEA]), follicle-stimulating hormone (FSH), luteinizing hormone (LH), and modified Ferryman-Gallwey (mFG) questionnaire for hirsutism. Secondary outcomes included changes to waist circumference (WC), weight, and BMI. Patients visited the hospital at baseline and at 12 weeks. At each visit, blood was drawn after an 8-10 h fast either on the third day of the menstrual cycle or, in women without menstrual periods, at earliest opportunity after recruitment. Anthropomorphic parameters were measured. Patients completed a 24-h food recall and the short version of the international physical activity questionnaire (IPAQ).

All study parameters were similar between the groups at baseline. No significant differences were observed in terms of energy intake, dietary parameters, and physical activity at baseline and at the end of the trial. At the end of 12 weeks, FPG and DHEA levels were significantly lower in the intervention compared to the placebo (P [adjusted] = 0.048 and P [adjusted] = 0.035, respectively). Estradiol increased in the invention, although the increase was not significant. No other differences were observed for any of the insulin or hormonal parameters.

There were several limitations of this clinical trial. Consumption of nano-curcumin has been shown to be superior to curcumin and its use may have changed the results. Other antioxidant factors were not evaluated. Other parameters affecting PCOS were not measured, including inflammatory markers, lipid profile parameters, and Anti-Müllerian hormone levels.

The authors conclude that curcumin supplementation for three months reduces FPG and DHEA in patients diagnosed with PCOS. Results of this trial indicate estradiol may increase with curcumin supplementation. The authors recommend that future studies should be conducted over a longer duration and should investigate the efficacy of different dosages of curcumin.

The authors declare no conflict of interest.

—*Samaara Robbins*

The American Botanical Council has chosen not to reprint the original article.