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Poster Presentations

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Effect of chromium supplementation on metabolic biomarkers in women with polycystic ovary syndrome: A systematic review

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Background: Polycystic ovary syndrome (PCOS) is the most prevalent endocrine disorder in females at the age of fertility and is the main cause of infertility. PCOS affects 11-18% of females' population in the world and 6-8% of females at the age of fertility globally. According to the ESHRE guideline 2018, lifestyle modification (diet and physical activity) is the first treatment line of PCOS.

Objective: The purpose of the present study was to determine the effects of chromium supplementation on metabolic biomarkers in women with PCOS.

Materials and Methods: PubMed, Scopus, and Google Scholar databases were searched for literature published between September 2005 and December 2020. The applied Mesh terms were "chromium picolinate," "polycystic ovary syndrome," and "polycystic ovary syndrome treatment". The collected data contained 10 clinical trials, of which 10 were reviewed systematically. All studies were randomized placebo-controlled trials in women with PCOS that investigated the efficacy of chromium supplementation in PCOS improvement.

Results: In 10 articles being examined, six articles indicated the increase in insulin sensitivity and the decrease in clinical or biochemical hyperandrogenism, four articles showed a significant decrease in body mass index, three articles showed regular menstruation and ovulation, and two articles showed the decrease in triglyceride, total cholesterol, fasting blood sugar, malondialdehyde, high-sensitivity C-reactive protein and glucose content (the increase in the glucose excreted).

Conclusion: Chromium supplementation in females with PCOS decreased fasting serum insulin or insulin resistance and increases insulin sensitivity and it also decreases clinical or biochemical hyperandrogenism. Since at least elemental chromium to show effective metabolism of glucose and lipid is 200 micrograms of elemental trivalent chromium, we suggest to the researchers to use at least this level or more with large sample size and for a long time (more than 12 wk) in future clinical trials. Secondly, we suggested that instead of examining the effect of chromium alone, the synergistic effect of chromium+ carnitine or chromium+ inositol or chromium+ carnitine+ orlistat will be studied on the metabolic biomarkers in women suffering from PCOS in future studies.

Key words: *Chromium, Picolinate, Polycystic ovary syndrome, Systematic review.*