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Efficacy and Safety of Coenzyme Q10 Supplementation in the Treatment of Polycystic Ovary Syndrome: a Systematic Review and Meta-analysis

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Abstract

The aim of this study is to evaluate the efficacy and safety of coenzyme Q10 supplementation in the treatment of polycystic ovary syndrome (PCOS). We first searched PubMed, Wanfang Data, CNKI, Embase, ClinicalTrial.gov, and other databases. The retrieval time from the establishment of the database to January 2021. We collected relevant randomized controlled trials (RCTs) about coenzyme Q10 in the treatment of PCOS. Risk of bias assessment and meta-analysis of RCTs were performed using RevMan 5.0 software. This systematic review and meta-analysis include a total of 9 RCTs involving 1021 patients. The results show that the addition of coenzyme Q10 may improve insulin resistance (HOMA-IR (WMD - 0.67 [- 0.87, - 0.48], $P < 0.00001$); fasting insulin (WMD - 1.75 [- 2.65, - 0.84], $P = 0.0002$); fasting plasma glucose (WMD - 5.20 [- 8.86, - 1.54], $P = 0.005$)), improve sex hormone levels (FSH (SMD - 0.45 [0.11, 0.78], $P = 0.009$); testosterone (SMD - 0.28 [- 0.49, - 0.06], $P = 0.01$)), and improve blood lipids (triglycerides (SMD - 0.49 [- 0.89, - 0.09], $P = 0.02$); total cholesterol (SMD - 0.35 [- 0.56, - 0.14], $P = 0.001$); LDL-C (SMD - 0.22 [- 0.43, - 0.01], $P = 0.04$); HDL-C (SMD 0.22 [0.01, 0.43], $P = 0.04$)). Only one RCT reported adverse events, and they found that patients had no adverse effects or symptoms following supplementation. Based on the current evidence, it could be considered that the addition of CoQ10 is a safe therapy to improve PCOS by improving insulin resistance (reduce HOMA-IR, FINS, FPG), increasing sex hormone levels (increase FSH, reduce testosterone), and improving blood lipids (reduce TG, TC, LDL-C, and increased HDL-C).

Keywords: Coenzyme Q10; Meta-analysis; Polycystic ovary syndrome; Systematic review.

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