

Abstract

Effects of Curcumin, Resveratrol, and Quercetin on Endometriosis and Polycystic Ovaries Syndrome—A Review [†]

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Abstract: Background and objectives: Endometriosis is a condition, in which tissue similar to the lining of the uterus grows outside of it. Polycystic ovarian syndrome (PCOS) is a heterogeneous endocrine disorder, caused by the imbalance of androgen hormones. This study aims to shed light on the mechanisms of action and efficiency of curcumin, resveratrol, and quercetin, polyphenols found in medicinal plants and foods, in the treatment of endometriosis and PCOS. Methods: The literature review from PubMed/Medline, Embase electronic databases, and Google Scholar databases with the keywords related to the study topic is used as a research methodology. Only studies with supplemental herbal products intervention in patients with diagnosed PCOS or endometriosis were included. Results: An interventional study conducted on women with endometriosis, diagnosed using laparoscopy, showed that curcumin administered in the solution concentrations of 30 $\mu\text{mol/L}$ and 50 $\mu\text{mol/L}$ reduced the number of E2 endometriotic stromal cells and slowed their growth. A systematic review showed that curcumin administered in doses of 80 mg and 500 mg decreased body mass index, fasting plasma glucose, insulin, homeostatic model assessment for insulin resistance, total cholesterol, and C-reactive protein (CRP) among patients with PCOS. An interventional study among 40 patients with PCOS, showed that resveratrol administered in a dose of 800 mg/day decreased the serum levels of interleukin (IL)-6, IL-1 β , tumor necrosis factor α (TNF- α), IL-18, NF- κ B, and CRP. A randomized clinical trial found that the intake of resveratrol in a dose of 40 mg/day with the monophasic contraceptive pill reduced the pain scores in women with a diagnosis of endometriosis. A systematic review reported that 1000 mg of quercetin improved PCOS-related indexes and the levels of estradiol among women in experimental studies. An experimental study showed that quercetin had antiproliferative effects in vitro and in vivo, by cell accumulation at sub-G0/G1 phase and apoptotic function in endometriosis cells. Discussion: Curcumin, resveratrol, and quercetin have various effects on PCOS and endometriosis and are effective through various mechanisms of action. Nevertheless, more studies are needed to evaluate the polyphenols' efficiency in detail, especially the effects of resveratrol and quercetin in humans.

Keywords: endometriosis; PCOS; curcumin; resveratrol; quercetin



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