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Title: Endocrine Disruptors and PCOS: Exploring the Impact of BPA and Phthalate Esters

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Abstract (up to 300 words)

Polycystic Ovary Syndrome (PCOS) is a complex endocrine disorder influenced by genetic, hormonal, and environmental factors. Among the environmental factors, endocrine disruptors such as Bisphenol A (BPA), Mono(2-ethylhexyl) phthalate (MEHP), and Di(2-ethylhexyl) phthalate (DEHP) have been implicated in the development of PCOS.

Objective: The study objective was to compare demographic, biochemical parameters, and levels of BPA, MEHP, and DEHP in women with and without PCOS, shedding light on their potential roles in PCOS development by employing High-performance liquid chromatography (HPLC).

Methods: 150 participants were enrolled, 80 in the PCOS group and 70 in the control group. Demographic and biochemical parameters were recorded and compared between groups. Serum levels of BPA, MEHP, and DEHP were measured using High-Performance Liquid Chromatography (HPLC).

Results: Women with PCOS exhibited higher mean age and Body Mass Index (BMI) compared to controls ($p < 0.0001$). Elevated testosterone and luteinizing hormone (LH) levels were observed in the PCOS group ($p < 0.05$). While estradiol, follicle-stimulating hormone (FSH), prolactin (PRL), LH/FSH ratio, dehydroepiandrosterone sulfate (DHEA-S), and thyroid-stimulating hormone (TSH) showed no significant differences, BPA, MEHP, and DEHP levels were significantly higher in the PCOS group ($p < 0.0001$, $p < 0.0001$, and $p = 0.03$, respectively). DEHP levels in PCOS correlated positively with LH levels, LH/FSH ratio, and estradiol levels. However, MEHP levels exhibited no significant correlations. Neither MEHP nor DEHP showed significant correlations with the examined parameters in the control group.

Conclusion: This study highlights the elevated levels of BPA, MEHP, and DEHP in women with PCOS, suggesting their potential roles in PCOS pathogenesis. The study underscores the utility of HPLC analysis in detecting these endocrine disruptors and emphasizes the need for further research on their relationships with PCOS development.



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Biography (up to 150 words)

Rushikesh Joshi has completed his PhD from The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat India. He is Assistant Professor in Department of Biochemistry and Forensic Science, Gujarat University, Ahmedabad, India. He has over 30 publications, cited over 170 times, and his publication H-index is 07. Dr. Joshi's research focuses on the Clinical Biochemistry (genomic and metabolomic study in PCOS) and Proteomics (proteins involved in plant metabolism and defense pathways). He has awarded two research projects from SERB and GUJCOST.

Recent publication:

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3. Thaker, Khushali; Patoliya, Jaimini; Rabadiya, Khushbu; Patel, Dhaval; Ponnuchamy, Manivel; Rama Reddy, Nagaraja Reddy; **Joshi, Rushikesh**; (2023) An in-silico approach to unravel the structure of 3-deoxy-D-arabino-heptulosonate 7-phosphate synthase (DAHPS): a critical enzyme for sennoside biosynthesis in *Cassia angustifolia* Vahl, *Journal of Biomolecular Structure and Dynamics*, <https://doi.org/10.1080/07391102.2023.2216300>.
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8. **Joshi, Rushikesh G**; Ratna Prabha, C; (2017) Degrons of yeast and mammalian ornithine decarboxylase enzymes make potent combination for regulated targeted protein degradation, Applied microbiology and biotechnology, 101, 2905-2917.
9. **Joshi, Rushikesh G**; Kulkarni, Swapnali; Prabha, C Ratna; (2015) Engineering degrons of yeast ornithine decarboxylase as vehicles for efficient targeted protein degradation, Biochimica et Biophysica Acta (BBA)-General Subjects, 1850: 12, 2452-2463.

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