



Journal of Hospital Pharmacy  
An Official Publication of Bureau for Health & Education Status Upliftment  
(Constitutionally Entitled as Health-Education, Bureau)

## PARP Inhibitor Resistance in Ovarian Cancer: Mechanisms, Biomarkers, and Therapeutic Strategies

*M Akhila<sup>1\*</sup>, D Vyshnavi Neela<sup>1</sup>, B Dharani<sup>1</sup>, P Prasanthi<sup>1</sup>, Dr. Shaik Farahan Subahan<sup>2</sup>*

<sup>1</sup>Pharm D, Vijaya Institute of Pharmaceutical Sciences for women, Vijayawada, Andhra Pradesh, India.

<sup>2</sup>Associate Professor, Department of Pharmacy Practice, Vijaya Institute of Pharmaceutical Sciences for women, Vijayawada, Andhra Pradesh, India.

Email Id: [serviceheb@gmail.com](mailto:serviceheb@gmail.com)

### ABSTRACT

Ovarian cancer remains a leading cause of gynecologic cancer mortality, largely due to the development of treatment resistance. Poly(ADP-ribose) polymerase (PARP) inhibitors have transformed the management of homologous recombination-deficient tumors, particularly those harboring BRCA mutations. However, both intrinsic and acquired resistance limit their long-term clinical benefit. This review summarizes key DNA damage repair pathways in ovarian cancer, the biological role of PARP enzymes, and the mechanistic basis of PARP inhibitor activity. We comprehensively discuss emerging molecular mechanisms of resistance, including restoration of homologous recombination, replication fork protection, and chromatin remodeling. Finally, we highlight biomarkers, combination strategies, and future precision-based approaches aimed at overcoming resistance and improving durable outcomes in ovarian cancer patients.

**Keywords:** Ovarian cancer; PARP inhibitors; Treatment resistance; DNA damage response; Homologous recombination deficiency; BRCA mutations; Replication fork protection; Precision oncology.

Access this Article Online	Quick Response Code: 
Website: <a href="http://www.journalofhospitalpharmacy.in">http://www.journalofhospitalpharmacy.in</a>	
Received on 28/01/2026	
Accepted on 12/02/2026 © HEB All rights reserved	