

Overexpression of ESPL1 Is Associated with Progression and Poor Prognosis in Endometrial Cancer: A Study of Bioinformatics Analysis Combined with Experimental Research

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Abstract

Background: Endometrial cancer (EC) is one of the most prevalent malignant tumors affecting the female reproductive system and has a growing overall prevalence and a lack of effective treatments. Extra spindle pole bodies-like 1 (ESPL1), an isolated enzyme that can participate in mitosis, plays a role in developing several malignancies and influences prognosis. This study focuses on the role of ESPL1 in the progression, prognosis, and immunotherapeutic response of EC. **Methods:** In this study, we analyzed the expression of ESPL1 in EC from the Cancer Genome Atlas database (TCGA). We used bioinformatics tools to investigate the significance of ESPL1 expression in EC and its related functions. The ESPL1 was identified as a prognostic biomarker. Its expression and function were validated by clinical samples and in vitro experiments. The role of ESPL1 in DNA damage repair, chemotherapy resistance, immune cell infiltration, and its correlation with the signal transducer and activator of the transcription 3 (STAT3) pathway and immunotherapeutic response were also evaluated. **Results:** ESPL1 expression was significantly elevated in EC and was associated with clinical stage, menopausal status, and poor prognosis. In vitro experiments, overexpression of ESPL1 promoted EC cell proliferation, migration, and invasion, while knockdown reversed these effects. Mechanistically, ESPL1 potentially promotes EC growth by increasing phosphorylation of the STAT3 signaling pathway. ESPL1 may be associated with DNA damage repair and chemotherapy resistance. Low ESPL1 expression correlates with immune cell infiltration and improved response to immunotherapy. **Conclusion:** ESPL1 may serve as a promising prognostic biomarker and therapeutic target for EC.

Keywords

Endometrial Cancer, ESPL1, Biomarker, Prognosis, Immunoassay