Poster
Middle East Journal of Cancer; Vol 15, No 2_Supplement: April 2024

Oct-4 and Its Role in the Oncogenesis of Colorectal Cancer

Mohammad Kordkatouli[*], William C. CHO[**], Seyed Abolghassem Mohammad Bondarkhilli[*♦], Audrius Dulskas[***], Seyed Amir Mohammad Qureshi[*]

[*]Department of Biology, Gorgan Branch, Islamic Azad University, Gorgan, Iran
[**]Department of Clinical Oncology, Queen Elizabeth Hospital, Hong Kong, China
[***]Department of Abdominal and General Surgery and Oncology, National Cancer Institute, Vilnius, Lithuania

Please cite this article as: Kordkatouli M, CHO WC, Mohammad Bondarkhilli SA, Dulskas A, Qureshi SAM. Oct-4 and its role in the oncogenesis of colorectal cancer. Middle East J Cancer. 2024;15(2_ Supplement).

Abstract

Colorectal cancer (CRC) ranks among the world's most prevalent cancers, annually claiming tens of thousands of lives. Early detection of tumor DNA in serum/plasma before metastasis can significantly enhance patient outcomes post-tumor removal. Recent advances in detecting tumor DNA in serum/plasma have catalyzed many new research directions and opportunities for molecular diagnostics. This article synthesizes data from approximately 45 research and review papers, representing the latest findings in this field. Specifically, 30 research articles from databases such as PubMed, Web of Science, Scopus, and Google Scholar were reviewed to investigate the diagnostic significance of Oct-4 in CRC. These articles focused on tissue samples from CRC and adjacent non-tumor tissues.

Oct-4, an octamer-binding transcription factor, is crucial for developing embryonic stem and germ cells. Moreover, it plays a vital role in preserving cancer stem-like characteristics in specific tumor types, making it a pivotal biomarker for cancer stem cells. Our study indicates a strong association between Oct-4 expression and CRC. Primary CRC tissues, matched non-tumor tissues, and benign polyp tissues, each representing different carcinogenesis stages, were analyzed to substantiate this claim. Oct-4 expression was quantified through reverse transcription polymerase chain reaction, flow cytometry, and immunohistochemistry analyses.

Furthermore, medical records of CRC patients were examined, and clinical pathology analyses were conducted to assess the correlation between Oct-4 expression and specific clinical pathology features. Findings reveal a progressive increase in Oct-4 transcription and translation from non-tumor tissues to benign polyp tissues and from benign polyps to CRC tissues. These observations suggest that aberrant Oct-4 expression may significantly contribute to the development of CRC.

Keywords: Oct-4, Colorectal cancer, Oncogene, Genetic factors

♦Corresponding Author:
Seyed Abolghassem Mohammad Bondarkhilli, PhD
Department of Biology, Gorgan Branch, Islamic Azad University, Gorgan, Iran
Email: sambondar2@gmail.com