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## Methylation markers in colorectal cancer: Current updates and future prospective

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Colorectal cancer (CRC) is the third most commonly diagnosed cancer in males and the second in females and the fourth most common cause of death worldwide with a major impact on societies across the globe. Effective prevention methods that include early diagnostic tests through screening programs are necessary to reduce cancer incidence and mortality. Both genetic and epigenetic alterations can cooperate in CRC initiation and progression. DNA methylation, histone modifications, and microRNA expression are epigenetic alterations in cancer. Aberrant DNA methylation changes, that are both stable and inheritable, occur early in carcinogenesis, thus it could be used as a noninvasive biomarkers for early detection and prognosis of cancers. In addition, methylation biomarkers can help in predicting response or resistance to chemotherapy. Reversibility of DNA methylation is another feature that was used to discover epigenetic drugs currently in use for the treatment of patients with hematological malignancies. However, the use of methylation biomarkers in CRC is still inadequate due to certain factors such as our incomplete knowledge about patterns of DNA methylation, methods of detection, specimens type (tissue, stool, and blood), and cancer heterogeneity. Therefore, we are still in

need for further randomised clinical trials and large-scale investigations, especially in different populations in order to identify specific, sensitive, and cost effective methylation biomarkers for CRC. The aim of this presentation is to discuss the recent findings in the field of methylation biomarkers in CRC and to delineate future challenges for the field.

### Speaker Biography

Ahmed Khamas Alhumairi received his MBChB (2004) in Medicine from University of Baghdad and Ph.D. from Tokyo Medical and Dental University, TMDU, in Medical Science (2012). He recently joined Ibn-Alhaytham Medical Center, Ibra, Oman as a GP and was the head of continuing medical education at the Garmyan Health Directorate, Sulaimaniya, Iraq. Prior to joining the doctoral course in 2008, he was a research student at TMDU (2007-2008). His areas of research interest include epigenetics and its role in cancer development, discovery of tumor suppressor genes inactivated by methylation, methylation control of renewal and differentiation in cancer stem cells, methylation silenced miRNA genes and how it can represent a novel target for epigenetic drugs in cancer. He is a member of the American Association of Cancer Research (AACR) and Cancer Epigenetics Society (CES).

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