

Evaluating Plasma Expression of miR-21 in Colorectal Cancer Patients in Khorasan Population

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Introduction: Colorectal cancer (CRC) is a major cause of morbidity and mortality worldwide. Common methods used for CRC screening are invasive and it is necessary to develop novel effective and non-invasive methods for early diagnosis of this malignancy. microRNAs are small noncoding RNAs (18-22 nt) with important roles in different aspect of cellular process including proliferation, differentiation, apoptosis and cell death. Previous studies have shown that microRNAs are stable in the extracellular fluids like serum /plasma and the expression level can be associated with various complex diseases such as cancer. In the present study, expression of miR-21 in the plasma of patients newly diagnosed with CRC was evaluated in Khorasan population.

Materials & Methods: Preoperative CRC plasma samples and normal samples were collected from 35 CRC patients and 23 healthy controls between 2013 and 2018, respectively. After that, RNA was isolated from plasma and cDNA was synthesized. Eventually, Expression level of miR-21 was then evaluated in these samples using stem-loop real time PCR. Herein, we used miR-16 as an internal control.

Results: The results indicated that plasma expression level of miR-21 was significantly higher ($P < 0.0001$) in the CRC patients samples in comparison with healthy controls and could discriminated patients from healthy control by high AUC=0.91, associated with 0.91 sensitivity and 0.82 specificity. Furthermore, up-regulation of this miRNA in plasma was not related to age, sex or tumor metastasis

Conclusion: These findings reveal that plasma miR-21 can be used as a diagnostic and prognostic biomarker for CRC patients in Khorasan population.