# MicroRNAs biomarkers for early screening of colorectal cancer

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**Background:** Colorectal cancer (CRC) is the most incident neoplasia in Portugal [1]. When diagnosed early, the 5-year cancer survival rate increases to 90% [2]. However, the current noninvasive screening method for CRC, Fecal Immunochemical Test (FIT), has low sensitivity and specificity for detecting precancerous lesions [3, 4]. Therefore, it is necessary to develop a new screening method for CRC. MicroRNAs (miRs) play a role in genetic events associated with carcinogenesis, and their disrupted expression in tumors can be readily detected in biological fluids [5-8]. This characteristic offers a promising tool for CRC screening. **Objective:** Review the existing literature to assess the advancements made in recent years in the potential use of miRs as a biomarker to improve the CRC screening. **Methods:** A comprehensive literature review was conducted, analyzing a total of 54 studies that investigated miRs expression in stool and blood samples and evaluated is potential as biomarkers for CRC identification. **Results:** In our search, we identified a total of 104 miRs with potential relevance to CRC screening in both stool and blood samples. Among these miRs, miR-21-5p and miR-92a-3p, along their cluster including miR-29a-3p, miR-20a-5p, and miR-18-5p, emerged as the most frequently mentioned and promising candidates. Furthermore, is reported a differential expression of miR-135b-5p, miR-223-3p, and miR-451 only in stool specimens, while miR-139-3p and miR-4516 exhibit this altered expression in blood samples. Other notable miRs, including miR-146a-5p, miR-199a-5p, miR-421, miR-27a-3p, and miR-221-3p, have shown promising results in detecting advanced adenomas, exhibiting a better performance compared to FIT. However, these findings require further validation in a larger patient cohort and across different biological samples to confirm their significance for CRC and precancerous lesions detection. **Conclusions:** Therefore, miRs are regarded as a promising approach for enhancing the detection of CRC, particularly in the identification of precancerous lesions. Nevertheless, further studies are required to assess the accuracy of these molecules as biomarkers.

**Keywords:** Biomarkers; colorectal cancer; early screening; MicroRNAs;

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