**MicroRNAs: New non-invasive diagnostic and therapeutic methods for cancer**

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**Abstract**

Cancer is a global health problem and a main cause of mortality. The most cancer-associated cases of mortality are a consequence of lacking of effective treatments and biomarkers for early diagnosis. New hopes for the improvement of early diagnosis and treatment of cancer synchronize with emerging of microRNAs (miRNAs). MiRNAs are small noncoding single stranded RNAs whose length approximately 18-25 nucleotides and bind to 3’ untranslated region (3’UTR) of target messenger RNAs (mRNAs), leading to mRNA degradation or translational inhibition, thus they regulate gene expressions transcriptionally or post-transcriptionally. It is noteworthy miRNAs participate in multiple cancer-related biological processes, including proliferation, .apoptosis, angiogenesis, drug resistance, invasion and metastasis. Interestingly, the identified cancer-associated miRNAs including over-expressed oncogenic miRNAs (oncomiRs) or under-expressed tumor-suppressive miRNAs are diverse and specific for different tissues and cancer types, that serve to use miRNAs as promising and potential biomarkers for diagnosis and therapeutic targets. The microRNA expression changes in peripheral blood can be assayed using non-invasive, low-cost, precise, and rapid tools. This genetic testing of microRNAs opens up the exciting possibility of early diagnosis and early surgical treatment before the onset of metastasis.

Keywords: MicroRNAs, cancer diagnosis, anticancer therapy