

Abstract

MicroRNAs are short non-coding RNAs that negatively regulate gene expression at post-transcriptional level by interfering with mRNA translation and stability. Recently, microRNAs were surprisingly found to be present in various body fluids including blood plasma and serum, cerebrospinal fluid, saliva, milk or urine. These extracellular microRNAs are resistant to RNases and stable in high temperature or pH. Extreme stability of extracellular microRNAs is caused by their association with protective protein complexes (mostly with Argonaute proteins). MicroRNAs are frequently deregulated in cancer and specific tumor-related microRNAs can be also detected in body fluids, indicating that extracellular microRNAs can be used as tumor specific markers. This Bachelor thesis reviews basic principles of microRNA function and biogenesis with focus on extracellular microRNAs and their role in intercellular communication, and it highlights the role of extracellular microRNAs in hematological malignancies and their possible use in diagnosis and treatment.