Abstract

MicroRNAs are small protein non-coding, ~ 22 nucleotides long dsRNAs. Their main task is suppression of gene expression via removal/destabilization of mRNA or its targeting to degradation. These small molecules play an important role in the regulation of many cellular processes and have been found to affect expression of more than 30% of human genes. Among the processes affected or regulated by miRNAa belongs also programmed cell death. Although this work is mainly focused on the analysis and characterization a role of distinct miRNAs in the regulation of apoptotic cell death, miRNAs can also participate in the regulation of autophagic cell death or programmed necrosis. MiRNA can enhance cellular sensitivity to apoptosis by suppressing the expression of death receptor genes, but can also drive cells to apoptosis by regulating expression of anti-apoptotic protein Bcl-2. In many different organisms were already discovered and described thausends of micro RNAs anddozens of them participate in the regulation of cell death. Poor or impaired function of miRNAs and related disturbance in apoptotic signaling could lead to a number of pathological processes as tumorigenesis or disturbances in tissue development and homeostasis. . Understanding how miRNA functions in cell death and possible practical applications of these findings could bring substantional advancements in treating cancer, myocardial infarction, or other pathological conditions.