

Comparative aspects of microRNA expression in canine and human cancers

ABSTRACT

MicroRNAs (miRNAs) have important roles in all biological pathways in multicellular organisms. Over 1,400 human miRNAs have been identified, and many are conserved among vertebrates and invertebrates. Regulation of miRNA is the most common mode of post-transcriptional gene regulation. The miRNAs that are involved in the initiation and progression of cancers are termed oncomiRs and several of them have been identified in canine and human cancers. Similarly, several miRNAs have been reported to be down-regulated in cancers of the two species. In this review, current information on the expression and roles of miRNAs in oncogenesis and progression of human and canine cancers, as well the roles miRNAs have in cancer stem cell biology, are highlighted. The potential for the use of miRNAs as therapeutic targets in personalized cancer therapy in domestic dogs and their possible application in human cancer counterparts are also discussed.

Keyword: Dogs; Gene expression; MicroRNAs; Neoplasms; Stem cells