Role of microRNAs in liver diseases

Dr. Senthil Kumar Venugopal
Associate Professor
Faculty of Life Sciences and Biotechnology
South Asian University

Liver is a multifunction organ, involved in various functions such as detoxification, glycogen storage, protein synthesis, production of various enzymes, etc. The liver can be injured by drugs, viral infections, oxidative stress, and autoimmune disorders. Liver is the only organ that can regenerate to its original mass, after significant cellular loss. Although several investigators have studied the mechanism by which the liver diseases occur, the regulation of gene expression in the progression of chronic liver disease is not known. Recently, it was described that microRNAs regulate various cell functions by modulating gene expression. MicroRNAs are a small noncoding family of 21-23-nucleotide RNAs that regulate gene expression by targeting mRNAs in a sequence-specific manner, inducing translational repression or mRNA degradation, depending on the degree of complementarity between microRNAs and their targets. They appear to regulate a series of cellular activities, including development, cell proliferation, differentiation, apoptosis, glucose metabolism, stress resistance and cancer. Our laboratory is working on the role of microRNAs in regulating liver functions. The presentation will include the role of some of the microRNAs that we have worked in recent years. By identifying the differentially expressed microRNAs in liver diseases, could be either used as biomarkers and/or as therapeutic agents.