Abstract

Pulmonary Arterial hypertension (PAH) is a devastating progressive disease that significantly decreases quality of life and has the average survival rate of only few years. One of the significant initiators of PAH is chronic hypoxia. After more than six decades of research that was initiated in 1946 by von Euler and Liljestrand, a new group of potential regulators of this pathology was discovered, that became heavily studied in the last five years. They are highly conserved molecules belonging to non-coding RNA. These 19-23 nucleotides long microRNA (miRNA) act as negative regulators of expression on various proteins. Many of them regulate traditional signalling pathways of hypoxic PAH (HIF-1, BMPR2) and miRNA is in turn regulated by other signalizations. Together, that creates an interconnected network of direct and indirect interactions and feedback loops, that we need to study in order to understand hypoxic PAH. This thesis summarizes findings about important miRNA molecules from the last few years and elucidates part of these regulatory mechanisms on several miRNA molecules (miR-17-92, miR-21, miR-210, miR-204 a miR143/145).