

Non-alcoholic fatty disease (NAFLD) is a liver disorder, which affects up to 25% of the population in countries all over the world. It is estimated that up to 75% of people suffering from simple fatty liver have also more aggressive form of the disease – NASH. Unfortunately, NAFLD prevalence is expected to increase steadily and is going to increase to more than 100,9 million cases of the disease in 2030, which is almost one-quarter times more than in 2015. NAFLD can lead to liver cancer, however it is hard to identify, because it gives nonspecific symptoms like feeling tired or discomfort in the upper right side of the abdomen or even there would be no symptoms until considerable liver damage. To make matters worse, there are no medicines approved to treat NAFLD. Furthermore, the accompanying problems/risk factor of NAFLD are obesity and insulin resistance characteristic in diabetes type 2. The understanding of each of the mechanisms of insulin resistance in NAFLD would help make a therapy for such patients. The above facts justify the need to study this disease in order to discover effective treatment. An increasing number of reports indicate that oxidative stress as well as impairment in processes responsible for repair of damaged DNA may have great importance in the development of this disease. Therefore, the aim of this project will be to investigate the relationship between the insulin resistance in NAFLD patients and the DNA repair pathways on the level of genes and proteins. This would greatly broaden our knowledge about pathogenesis of the disease and therefore, would allow to improve a diagnosis to avoid the situation when untreated disease leads to the liver failure, so the patient would need a liver transplantation, which involves waiting in long queues for new organ, what can be a cause of a death.