

Civilization diseases are diseases related to the negative effects of living in the conditions of a highly developed civilization. They are one of the biggest health problems of developed and rapidly developing countries, including Poland - mainly due to the increasing prevalence and economic aspects. Lifestyle diseases include, among others, obesity and asthma. Obesity is a chronic systemic disease, where accumulated excess adipose tissue may lead to impairment of health. According to the World Health Organization, about 1.6 billion people worldwide are overweight and obese people represent, up to 522 million. In 2000, the number of obese people in the world exceeded 300 million. Thus, obesity is not just a medical problem but also a social and economic - costs associated with obesity date back to 7% in Europe. It should be emphasized that obesity is a condition that can affect any age and socioeconomic group of people. Asthma is a chronic inflammatory disease of the airways. The prevalence of asthma in Poland is high, which is important, many patients with asthma - characterized by paroxysmal nocturnal dyspnea and cough do not even know of its existence. It is estimated that approximately 300 million people worldwide suffer from asthma. Most of the authors demonstrate that there is an increased risk of asthma in obese people. In the literature we find even the term "distinct phenotype of asthma" featuring increased asthma severity and relative corticosteroid resistance. Chronic inflammation in asthma leads to bronchial hyperreactivity. In obese, pulmonary function is impaired by the process of fatty infiltration of the chest wall, therefore there is an increase in blood volume in the vessels of the lungs. In addition, excess body fat significantly reduces the mobility of the chest. Obesity leads to a reduction in the diameter of the peripheral airways, which may lead to an increase in airway hyperresponsiveness caused by change in the structure and function of smooth muscle. Significant impact of obesity on spirometry results is described in many studies. A significant decrease in respiratory ventilation parameters - FVC, FEV1 was observed in obese asthmatics. Several studies indicate that weight loss decreases asthma severity. Oxidative stress develops when there is an imbalance between production and the elimination of reactive oxygen species. In recent years, a significant increase in the concentration of oxidative stress parameters among people suffering from asthma and a decrease in the concentration of the reduced form of glutathione in the cells has been observed. It has been proven that increased body fat content is associated with excessive contents of oxidative stress markers in the blood. Mechanism of the impact of oxidative stress in obesity on respiratory diseases was not understood. The planned project is an original experimental work on animals (mice), focusing on the analysis of markers of airway inflammation and oxidative stress parameters during the development of asthma in obese. Asthma, as a chronic disease, significantly impairs the quality of patients life. Nuisance symptoms affect daily life - professional and social activity. Asthma is among reason for the decline in labor productivity and increase absenteeism. Due to the chronic nature of the costs associated with treatment of the disease - they are high and represent a significant part of budget revenues. Therefore, this project aimed at understanding pathomechanism determining the development of asthma and the factors influencing its course is essential for developing better strategies to prevent and combat the disease. The results (including the assessment of therapeutic efficacy of two chemical compounds - apocynin and lipoic acid) and probiotics can make an important contribution to the development of science and may contribute to the development of new therapeutic approaches.