



**Fund “Nauka” Project № 24011 Resume – Special Competition-based Session
2024:**

“Study of tissue expression of selected microRNAs in colorectal carcinoma”

Project leader: Assoc. prof. Deyana Georgieva Vankova, PhD

Introduction: Colorectal carcinoma (CRC) is a malignant disease, which is one of the leading causes of mortality in developed countries. It accounts for nearly a quarter of all oncological diseases. This defines research in this area as being of current interest and having global significance.

The aim of the present study is to investigate the expression levels of specific microRNAs in CRC that target or are targeted by leptin and adiponectin.

Tasks: Selection of patients and a control group will be done. This will be followed by a collection of biological material (biopsy and blood). Bioinformatics methods will be applied in order to identify and select specific microRNAs for which statistically significant differential expression in CRC has been established in the literature. Investigation and analysis of expression levels of selected microRNAs in tissue samples will be conducted. MicroRNAs that target or are targeted by leptin and adiponectin will be selected. In this regard, the plasma levels of leptin and adiponectin will also be examined. Analysis and statistical processing of the obtained results will be carried out.

Materials and methods: Modern immunoenzymatic methods (ELISA) will be used to study the serum levels of the adipokines adiponectin and leptin. Databases such as miRTarBase, miRDB, dbDEMC, etc. will be used for microRNA selection. Molecular biology methods (quantitative real-time PCR) will be used to study microRNA levels in tissue samples. Statistical processing of the data will be carried out using specialized software.

Expected results: Obtaining new data regarding the expression of unexplored/ understudied microRNAs and/ or those for which there are conflicting data on their association with CRC. Data on the relationship of the studied microRNAs with the plasma levels of leptin and adiponectin will be obtained. The applicability of microRNA expression levels and plasma levels of leptin and adiponectin as biomarkers in CRC will be assessed.