

Cancer prevention is based on the use of bioactive compounds of plant origin contained in foods. Young shoots of red beet (*Beta vulgaris* L.), as a vegetative part of the plant in the phase of intensive growth, are a richer source of bioactive compounds (as demonstrated in our study) than a root at full maturity. Therefore, young shoots may be more important in pro-health prophylaxis, including cancer prevention. Furthermore, own studies have shown that young shoots effectively inhibit the growth of tumor cells and induce apoptosis, as compared to the root. Therefore, the goal of the research is to determine molecular mechanisms responsible for the reduction of cancer cell growth under the influence of the juice from young shoots of red beet.

Basic research will be carried out in the project, using human breast (hormone and non-hormone) cancer cells lines and a non-cancer cell line. Genes/proteins involved in the induction of apoptosis will be selected and molecular mechanisms of this process will be specified.

The reason for adopting this research subject is a need to search for new diet components with effective anticancer properties, which, according to the results of own, preliminary studies, young shoots of beetroot may provide. Indication of scientific evidence on the beneficial, anti-tumor effect of young shoots of beetroot can help to extend knowledge, promote their health properties and conscious consideration of their presence in the diet. Obtained results will lead to the reduction of the risk of morbidity, as well as financial burden associated with health care.