

Antitumor activity of young shoots of red cabbage (*Brassica oleracea* var. *capitata* f. *rubra*) in relation to prostate cancer cells measured by the proliferation, apoptosis and cell cycle analysis

Cancer is the cause of an increasing number of deaths in the world and the effectiveness of its treatment is largely dependent on stage of disease at the time of diagnosis. Experts from the World Cancer Research Fund and the American Institute for Cancer Research presented the recommendations for nutrition, body weight, physical activity and lifestyle in order to reduce the cancer risk. According to those principles, it is reasonable to search for appropriate dietary components which regular consumption from an early age would help reduce the risk of diet-related diseases, including cancer. In case of cruciferous vegetables it was observed that increasing level of consumptions, decreases the frequency of cancer incidence.

Red cabbage is a valuable source of bioactive compounds in a daily diet. Cruciferous vegetables have a high content of glucosinolates, polyphenols, vitamin C, carotenoids, and minerals. Due to its therapeutic properties, cabbage is known for over 4000 years. Raw cabbage as well as boiled and stewed has some health benefits. Fresh cabbage leaves and juice squeezed from them have soothing and antibacterial effects on the skin. Folk medicine uses wraps from the cabbage leaves for healing: wounds, burns, frostbites, changes after being bitten by the insect, neuralgia and inhibiting headache, cough, runny nose, development of rheumatic changes, or varicose veins.

The study will be applied to human prostate normal and cancer cells. The selection of these cell lines will allow to assess the reason of using the young shoots of red cabbage as an addition to the food diets. The aim of the project is 1) to demonstrate that young shoots of red cabbage, compared to vegetables at full maturity, are richer in bioactive compounds, and may be easily accessible, healthy component of the daily diet, 2) to explain the mechanisms of cytotoxic effect of the digested juice from young shoots of red cabbage on prostate cancer cells, 3) to create a scientific basis for the promotion of young shoots of red cabbage in human nutrition.