

A popular scientific summary of the project titled: **“Use of fruit and vegetable juices for color stabilization of anthocyanins isolated from purple-fleshed and red-fleshed potato cultivars”**.

Compared to other plant materials (fruits or vegetables), potatoes represent a very good experimental material due to the possibility of their versatile use, vast availability, high intake in many countries across the globe, and very good adaptation capabilities. In spite of the fact that potatoes are common to consumers, their chemical composition is still investigated by researchers worldwide. Such a high interest in this raw material is due to its varietal diversity and, thus, to its rich chemical composition. In recent years, ample studies have been conducted on potato cultivars with intensely colored flesh in the aspect of the potential use of their biologically active compounds (anthocyanins), while so far there have been no reports on the effects of temperature, pH or addition of natural antioxidants on the stability of these compounds in juices made of red-fleshed and purple-fleshed potato cultivars. Therefore, the objective of the Project will be to obtain anthocyanin pigments from juices, characterized by a diminished tendency for enzymatic browning, from red-fleshed and purple-fleshed potato cultivars. The second objective will be to determine stability of the isolated pigments under model conditions and after their addition to natural yoghurts.

It was assumed that the effect of temperature and the addition of juices from rhubarb, lemons or grapes being rich in organic acids would reduce the enzymatic browning of juices from purple-fleshed and red-fleshed potatoes that would be used to obtain anthocyanin pigments.

In the food industry, color of potato products is stabilized with sulfuric acid and its compounds, i.e. sodium bisulfite and sodium pyrosulfite, that have very good antioxidative properties and are inexpensive. However, due to their residues left in food after production process and due to their toxic effect on a human body, their use has contemporarily raised increasing controversies not only among consumers but producers as well. Today, novel natural raw materials are sought and implemented into technologies, the use of which may bring more benefits in the future. This is the case with natural organic acids, like citric, oxalic, malic, and tartaric acids, which occur in fruits, vegetables or juices made of them. Organic acids naturally present in plant materials exhibit similar antioxidative properties to sulfur compounds, but pose no risk to humans and animals, and their use does not raise concerns among consumers. Plant materials contain hydroxy acids which impart characteristic sourness and good taste to fruit-vegetable products and also decrease their pH value, thereby facilitating preservation of natural pigments. Organic acids exhibit also antioxidative activity, which diminishes the processes of enzymatic browning of fruit or vegetable pulp. In this Project, the following natural juices will be added to potato juices: rhubarb juice – rich in oxalic acid, lemon juice – characterized by a low pH value and a high concentration of citric acid, and grape juice – rich in tartaric acid. A change in the pH value of potato juices caused by the addition of a fruit or vegetable juice should minimize their browning. Another way to preserve the color of potato juice involves inactivation of enzymes: polyphenolic oxidase and peroxidase, through temperature treatment above 60°C.

Investigations planned in the framework of this Project address a new subject, and their results may represent an interesting source of information about thermal stability of biologically active compounds of potato juice and about possibilities of its versatile use for consumption and processing.