

Topic: Organic/conventional food discrimination

Principle: Metabonomic approach

Brief description:

Suggested work programme will be focused on unambiguous discrimination of organic and conventional potatoes, apples and carrots. Metabonomic principle will be applied. The marker for discrimination will be 5-hydroxymethyl-2-furaldehyde, based on our preliminary results [1]. The source of perturbation to activate the immunity system of selected crops will be inoculation with natural pathogenic microorganisms. Metabolomic analysis in selected parts of agricultural crops before and after the controlled perturbation will be the way to understand biochemical changes in the background of the observed phenomena. Planned results will confirm the difference between organic and conventional potatoes, apples and carrots. The source of discrimination is the variable response of the immunity system of organically and conventionally grown crops after the controlled attack of the pathogen [1, 2]. Additional output of the project will be the method for discrimination organic and conventional carrot. The method will be developed to the state when it will be ready for an interlaboratory trial. The selected crops apple, potato and carrot give chance to conclude a general statement on the difference between organic and conventional food.

1. Daško, E., Jijakli, H., Maquet, A. Application of a metabonomic approach for the discrimination of organically and conventionally grown carrots. International Workshop on Organic Food Authentication: Challenge or Utopia? Proceedings, 30/11 -01/12 2009. Geel, Belgium.
2. Daško, E., Drímal, J., Klimeková, M., Ťrgeová, E. Response of organically and conventionally produced potatoes to controlled attack of a pathogen. Journal of Food and Nutrition Research. 2012, 51, 89 – 95.

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