

# Abstract

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Title of bachelor thesis: **The Volatile Metabolites of Food Additives and Supplements**

Most of the food available in supermarkets contains food additives that are used to improve the appearance, smell and taste. Additives undergo metabolism in the human body undergo metabolism and can influence the health of the individual.

The aim of this thesis is to explore the possibility of establishing volatile metabolites present in human breath that arise as result of metabolism of food additives and supplements. Experiments focus on quantitative pharmacokinetics of volatile metabolites after ingestion of a substance selected from the group of artificial sweeteners and supplement. Food sweetener aspartame (E 951) used to achieve a sweet taste in foods and beverages was chosen as a model example. Aspartame is converted in the body to methyl alcohol, formic acid and phenylalanine. Therefore, we followed the methyl alcohol content in the breath of healthy volunteers. Breath analysis was performed using SIFT-MS (selected ion flow tube mass spectrometry) with the *Profile 3* instrument.

The results have shown the presence of methyl alcohol in breath and increase of its concentration depending on the amount of aspartame ingested. Ingestion of even relatively large amounts of commercially sold aspartame sweetened beverages does not lead to a noticeable increase in the methyl alcohol concentration in the breath above a resting physiological value. Ingestion of aspartame in amounts corresponding to the permissible daily dose has led to a fourfold increase in the concentration of methanol in the breath indicating an increased possibility of its toxicity

**Keywords:** aspartame, methyl alcohol, breath, mass spectrometry