

## Poster 2

### Metabolomic Profiling in Food of Animal Origin

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The aim of the presented project was to establish a profile of metabolites as a basis for the evaluation of food quality. Therefore samples of rainbow trout, carp, milk and pork were tested.

**Diadenosine polyphosphates (ApnA)** are a group of nucleotide derivatives that are constituents of nearly every cell type in pro- and eukaryotes. In mammalian systems ApnA have been implicated in regulation of vasodilation, platelet aggregation, synaptic neurotransmission and cell cycle control.

For separation of ApnA an ion-pair HPLC method with ESI-high resolution TOF was developed. Furthermore the sample extracts were used for a MS/MS screening for quality relevant metabolites. For mass based search for metabolites the Metabolite and Tandem MS Database of the Scripps Center For Metabolomics was used.

The detection of ApnA (n= 3-5) succeeded in food of animal origin at a physiological relevant concentration level. In some of the meat and fish samples traces of ApnA have been detected. The metabolite screening resulted amongst others in the identification of certain nucleotides. These screening results are in accordance with the results of the ribonucleoside analysis.

**Amino acids** are not only components of all proteins but also precursor compounds relevant to food flavour, taste and colouring. The content of free amino acids (FAA) in food is also interesting because of nutritional aspects. Taurine, occurring in the free form mainly in the animal kingdom, is important for many physiological processes. The HPLC determination of FAA occurred using a reversed-phase column and a fluorescence detector after pre-column derivatization with o-phthaldialdehyde.

The total amounts of FAA and of taurine in milk samples were very low and differed clearly from the values found in fish and pork muscle tissues. Fish contain more FAA than terrestrial animals. Taurine was the most prevalent compound in all tested carp and pork samples. In all samples glycine belonged to the 4 most frequent free amino acids.

**Ribonucleosides** are monomeric metabolites of ribonucleic acids. The characterization of unmodified and modified ribonucleosides is of interest to obtain a better understanding of these compounds as potential quality-related metabolites.

The ribonucleosides were determined using an automated dual-column HPLC analyzer.

In the milk samples, the unmodified ribonucleosides Cyd, Urd, Ino, Ado and Guo and also the modified ribonucleosides m1Ado and t6Ado were detected. Urd had the highest concentration, followed by Cyd. In the evening milkings, slightly higher concentrations were found than in the respective morning milkings. In the trout and carp samples no modified ribonucleosides were found. The levels of Cyd, Urd, Ado and Guo were <2mg/100 g, whereas Ino in much higher concentrations occurred. Also in the pork samples, only unmodified ribonucleosides were detected, and Ino again with the highest contents was determined. In fish and meat clearly higher contents of free available ribonucleosides are present as in raw cow's milk.