CORRELATION OF GC-O AND SENSORY DATA OF FINNISH HONEYS – OVERVIEW OF STATISTICAL METHODS

Sirli Rosenvald[1], Prof. Baoru Yang[2]

[1]*Department of chemistry and biotechnology, Tallinn University of Technology, Ehitajate tee 5, 19086 Tallinn, Estonia*

[2]*Department of Biochemistry, University of Turku, FI-20014, Finland*

e-mail of presenting author: sirli@tftak.eu

Seven Finnish honeys of different botanical origins were evaluated by 62 untrained panelists by using CATA method with 12 main attribute categories. Samples were also analyzed with SPME-GC-O by using 3 trained assessors and posterior intensity method to correlate sensory characteristics of honey with volatile compositions. Current presentation will cover the different chemometric techniques used to gain the most informative and reliable results.

Based on the GC-O results, modified frequency values of each detected compound in every sample were calculated. Prior to analysis predictors were autoscaled and the effect of log-transformation was also tested. For regression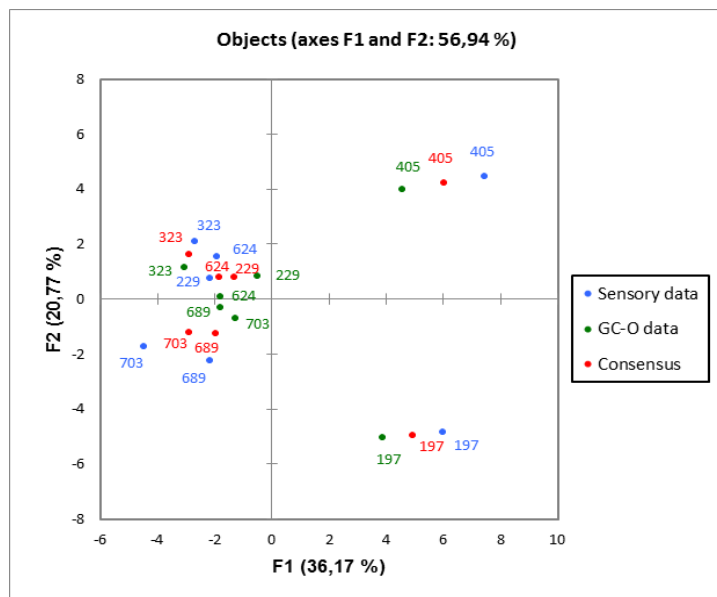 analysis, partial least square regression was used (PLSR). Generalized Procrustes Analysis (GPA) was also carried out to investigate the data.

Figure 1. GPA consensus biplot of the honey samples

By running PLSR on different groups (4 groups in total) of response variables determined with PCA, the gained models were of high quality. In all the cases Q^2, R^2X and R^2Y values with using only 2-3 components, were higher than 0.6 and with 5 components more than 0.9 in most of the groups. According to GPA samples map similarly based on sensory and GC-O datasets, indicating a good correlation between two datasets (Figure 1).