**Supplement 1.** Workflow of spectra analysis using MZMine 3.4

**A diagram of a chromatogram

Description automatically generated**

A graph with numbers and a bar

Description automatically generated

**Supplement 2.** Permutation validation test was carried out through MetaboAnalyst v6.0 on PLS-DA result confirming the validity of the analysis with data overfitting

A graph with numbers and lines

Description automatically generated

**Supplement 3.** Permutation validation test was carried out through MetaboAnalyst v6.0 on OPLS-DA result confirming the validity of the analysis with no data overfitting with the valid model

**A screen shot of a chart

Description automatically generated**

**Supplement 4.** Heatmap of all 12 *H. itama* bee bread samples (ungrouped)