

## Supplimentary Materials

### 1. HPLC Chromatogram of authentic amino acid standards.

Figure S1 Shows ion-exchange HPLC chromatogram of authentic amino acid standards (WAKO ANII + B).

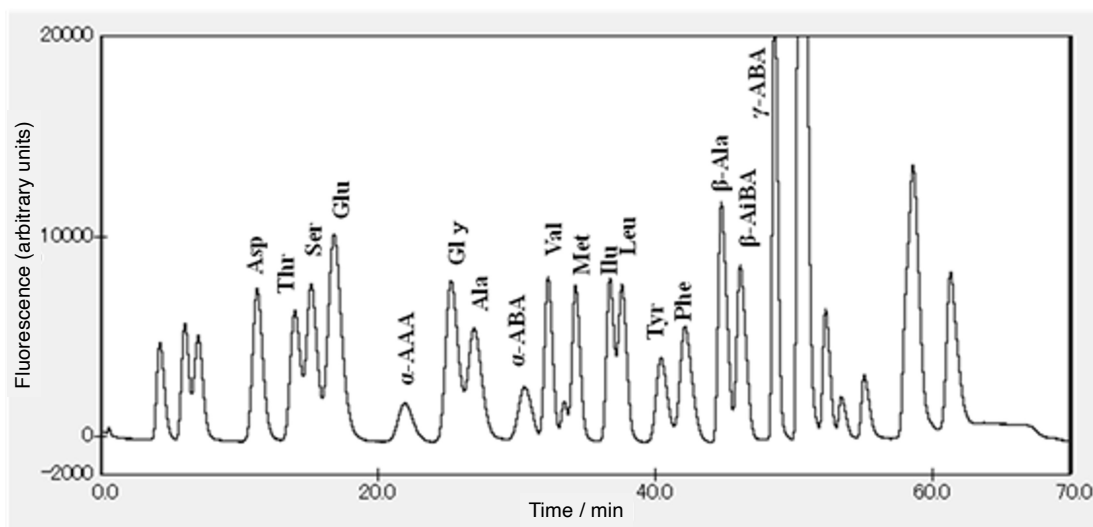


Figure S1. HPLC chromatogram of authentic amino acid standards.

AAA: aminoadipic acid, ABA: aminobutyric acid; AiBA: aminoisobutyric acid

### 2. Analysis of carboxylic acids by GC

Authentic standards were used to identify carboxylic acids by comparing the GC retention times. Monocarboxylic acids were derivatized to *p*-bromophenacyl esters [35] whereas dicarboxylic acids were derivatized to dibutyl esters [36]. As an example, a typical GC/FID trace is given below for the authentic standards of *p*-bromophenacyl ester derivatives of low molecular weight monocarboxylic acids (C<sub>1</sub>-C<sub>7</sub>). Figure S2 is a gas chromatogram of authentic monocarboxylic acids.

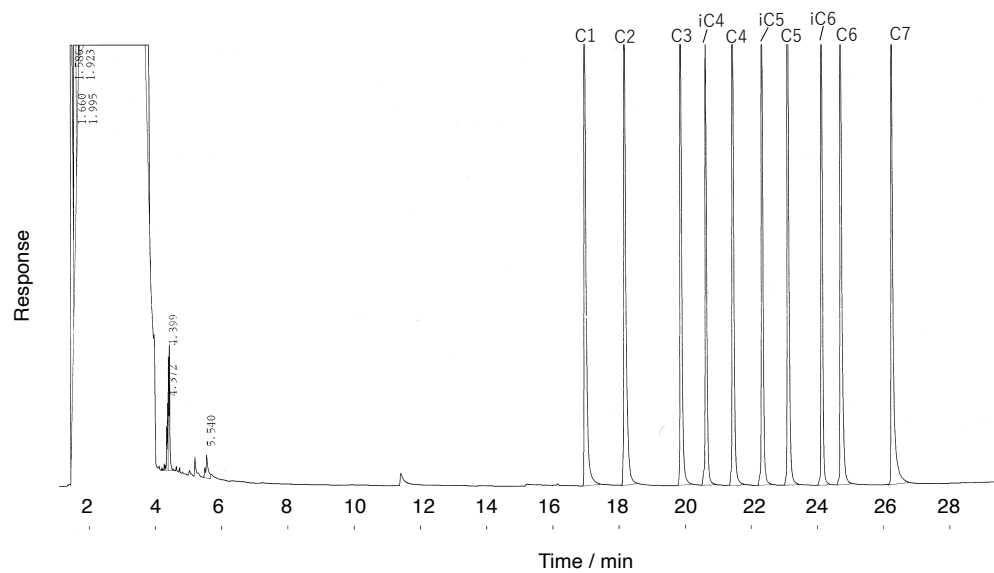


Figure S2. Capillary gas chromatogram of authentic standards of monocarboxylic acid (C<sub>1</sub>-C<sub>7</sub>) *p*-bromophenacyl esters. iC<sub>4</sub> means isobutanoic acid or isobutyric acid (2-methylpropanoic acid). The same for iC<sub>5</sub> and other branched chain acids.