**Additional file 2. Amino acid concentration measurement**

Liquid chromatography analyses were conducted by gradient methods using a dedicated column (Zivak Amino Acid Biological Fluids LC-MS/MS Analytical Column, Zivak Technologies, Istanbul, Turkey), mobile phase A and B (both were organic solvents provided by the Zivak kit manufacturer), and an Agilent 1260 Inﬁnity High-Performance Liquid Chromatography (HPLC) system (Agilent Technologies Inc., Santa Clara, CA, USA). Detection was performed using tandem mass-spectrometry (QTRAP 5500, SCIEX, Woodlands Central, Singapore) in the multiple reaction monitoring (MRM) mode. External calibrators and quality control materials were used at the start, middle, and end of each analytical batch. As for the repeatability of the assay, the coefficient of variation (CV) was 0.5–4.6% (Additional file 4).