**Table S1.** **Calibration parameters and internal standards used for absolute quantitation of selected metabolites in tissue extracts.** Calibration curve fits were linear and were generated using the ratio of the unlabeled standard peak area to the corresponding stable-isotope internal standard peak area. Stable isotope internal standard suppliers were: a Omicron Biochemical, b Sigma-Aldrich, c Cambridge Isotope.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Metabolite (IS isotope, supplier)** | Calibration curve concentrations (µM) | R2 | Internal standard concentration added to extraction solvent | | | | |
| **Skeletal muscle** | **Liver** | **Heart** | **Adipose** | **Serum** |
| Fructose 6-phosphate (13C6, a) | 0, 0.5, 2, 5, 20, 100 | 0.999 | 20 µM | 4 µM | 8 µM | 2 µM | 2 µM |
| Fructose 1,6-bisphosphate(13C6, a) | 0, 0.1, 0.4 ,1, 4, 20 | 0.999 | 8 µM | 1 µM | 8 µM | 0.2 µM | 0.8 µM |
| Lactate(13C2, b) | 0, 2, 8, 20, 80, 400 | 1.000 | 40 µM | 40 µM | 80 µM | 20 µM | 400 µM |
| Citrate (13C6, c) | 0, 0.25, 1, 2.5, 10, 50 | 0.999 | 2 µM | 0.4 µM | 8 µM | 2 µM | 20 µM |
| α-ketoglutarate (13C4, c) | 0, 0.1, 0.4 ,1, 4, 20 | 0.999 | 0.8 µM | 0.2 µM | 0.4 µM | 0.2 µM | 4 µM |
| Succinate (13C4, c) | 0, 0.5, 2, 5, 20, 100 | 0.999 | 4 µM | 4 µM | 20 µM | 1 µM | 40 µM |
| Malate (13C4, c) | 0, 0.5, 2, 5, 20, 100 | 0.999 | 4 µM | 4 µM | 8 µM | 1 µM | 10 µM |
| Adenosine monophosphate (13C1015N5, b) | 0, 0.5, 2, 5, 20, 100 | 0.999 | 0.8 µM | 10 µM | 8 µM | 2 µM | 2 µM |
| Adenosine diphosphate(13C1015N5, b) | 0, 0.5, 2, 5, 20, 100 | 0.999 | 4 µM | 10 µM | 4 µM | 2 µM | 2 µM |
| Adenosine triphosphate(13C1015N5, b) | 0, 0.5, 2, 5, 20, 100 | 0.999 | 40 µM | 20 µM | 40 µM | 4 µM | 4 µM |
| Amino acids  (algal-derived U- 13C mix, b) | 0, 0.25, 1, 2.5, 10, 50 | 0.998 to 1.000 | 10 µg/mL | 10 µg/mL | 20 µg/mL | 4 µg/mL | 20 µg/mL |