

## Supplementary File Caption

### Supplementary table captions

**Table S1** The ingredients and energy of the normal chow diet and high-fat diet.

**Table S2** Metabolite elution procedures and instrument parameters for non-targeted metabolomics analysis based on UPLC-QTOF/MS.

**Table S3** The elution procedure and instrument parameters for quantification analysis based on UPLC-QQQ-MS.

**Table S4** The optimized mass spectrometry parameters and standard curve information for quantification analysis based on UPLC-QQQ-MS.

**Table S5** The gene primers used for real-time quantitative PCR.

**Table S6** Contents of organic acids and sugars in UFT, LFT, and SFT.

**Table S7** Contents of free amino acids in UFT, LFT, and SFT.

**Table S8** Detailed information of differential metabolites between UFT and LFT groups.

**Table S9** Concentrations of different phenolic compounds in different samples measured by UPLC-QQQ-MS.

### Supplementary figure captions

**Fig. S1** The treatment flow chart of animal experiment design.

**Fig. S2** Total phenolic content and total flavonoid content of tomato before and after fermentation.

**Fig. S3** Changes in antioxidant activities of tomato before and after fermentation.

**Fig. S4** Total ion chromatogram (TIC) of the QC sample in (A) positive ion mode and (B) negative ion mode.

**Fig. S5** Relative standard deviation (RSD) distribution of ion features in QC sample.