**Online Supporting Material**

*Phenolic acids and their metabolites in urine and feeds*

*Polyphenol analysis*

Commercial Standards and Reagents

Sodium hydroxide, citric acid, trans-ferulic, p-hydroxybenzoic, caffeic, p-coumaric, and sinapic acids were purchased from Sigma-Aldrich Co. (St. Louis, MO). Isoferulic acid was kindly provided by Prof. Alan Crozier (College of Medical Veterinary and Life Sciences, University of Glasgow, UK). All solvents were purchased from Carlo Erba Reagents (Milano, Italy).

*Polyphenols metabolites in urine*

A preliminary analysis was carried out in full scan, data-dependent MS3 scanning from m/z 100 to 500, to identify the main urinary metabolites in both rat groups. On the basis of the data obtained, the main urinary metabolites were monitored in MS2 or MS3 mode. The MS worked in negative ionization mode, with capillary temperature equal to 275 °C, while the source heather temperature was set to 250 °C. The sheath gas flow was 40 units, while auxiliary and sweep gases were set to 5 units. The source voltage was 3 kV. The capillary voltage and tube lens were -5 and -68 V, respectively. For elution, phase A was aqueous formic acid (0.1% v:v) and phase B was acidified acetonitrile (0.1% formic acid). The mobile phase, pumped at a flow rate of 0.2 mL/min, was kept for 1 min at 2% B, followed by an 11 min linear gradient from 2% to 35% of B. All metabolites were fragmented in MS2 or MS3 using a CID of 30. The ionic abundance values of the most representative phenolic acid metabolites were used to evaluate their concentration change after WA diet.

*Polyphenols in control and wheat aleurone pellets*

The phenolic acid analysis was carried out in negative ionization mode. The MS worked with capillary temperature equal to 275 °C, while the source heather temperature was set to 45 °C. The sheath gas flow was 40 units, while auxiliary and sweep gases were set to 5 and 2 units, respectively. The source voltage was 4 kV. The capillary voltage and tube lens were -21 and -58 V, respectively. For chromatography, phase A was aqueous formic acid (0.1% v:v) and phase B was methanol/water (98:2 v:v). The mobile phase, pumped at a flow rate of 0.2 mL/min, was kept for 1 min at 7% B, and then a 12-min linear gradient from 7% to 50% of B. Analyses were carried out in Selected Reaction Monitoring (SRM) mode for monomeric phenolic acids. Specifically, p-hydroxybenzoic acid (m/z 137) was fragmented using a CID of 36 (arbitrary units), generating a fragment ion with m/z 93; p-coumaric acid (m/z 163) was fragmented with CID 30, generating the corresponding fragment ion at m/z 119; caffeic acid (m/z 179) yielded the corresponding fragment ion at m/z 135, using a CID of 29; ferulic acid (m/z 193) generated three daughter ions at m/z 134, 149 and 178, using a CID of 28; sinapic acid (m/z 223) generated three fragment ions at m/z 164, 179 and 208, with a CID of 25. The quantification of each phenolic acid was performed by calibration with the relative commercial pure standard. Dimeric and trimeric ferulic acids with a m/z equal to 385 and 577, respectively, were analyzed in full MS2 mode with a CID of 25 and quantified as ferulic acid equivalents. Further MS3 experiment was carried out to obtain a better identification of these compounds because of unavailability of pure commercial standards.