**Supplementary material S1**

*Chemical analyses*

Diets were analysed for dry matter (ISO 6469/NEN 3332), ash (ISO 5984/NEN 3329), Kjeldahl nitrogen (ISO 5983/NEN 3145), crude fat (ISO-DIS 6492), starch and sugars (NIKO-MEMO 93–302) as previously described ([Goelema *et al.*, 1998](#_ENREF_15)), and for gross energy (GE) using an adiabatic bomb calorimetry (IKA-C700, Janke & Kunkel, Heitersheim, Germany). Ti was analysed using a method based on Short *et al.* ([1996](#_ENREF_37)) and Myers *et al.* ([2004](#_ENREF_28)). Faeces were dried at 70°C and ground in a centrifugal mill to pass a 1.0-mm mesh screen (ZM100, Retsch B.V., Ochten, The Netherlands) prior to analyses. Faeces and urine were analysed for GE and faeces for Ti as described above. All analyses were carried out in duplicate.

Blood plasma was analysed for glucose (Glucose PAP SL; ELITech Group, Sees, France), insulin (Porcine/Canine Insulin EIA kit; ALPCO Diagnostics, New Hampshire, USA), triglycerides (Triglycerides liquicolor kit; Instruchemie, Delfzijl, The Netherlands), nonesterified fatty acids (NEFA) (NEFAc-kit, Wako; Instruchemie, Delfzijl, The Netherlands), active GLP-1 (GLP-1 ELISA kit; Millipore, Linco Research, Missouri, USA), active PYY (PYY EIA kit; Phoenix Pharmaceuticals, California, USA), tryptophan (Trp) (1H-NMR spectroscopy), large neutral amino acids (LNAA; sum of isoleucine, leucine, valine, phenylalanine, and tyrosine) (1H-NMR spectroscopy) and SCFA (1H-NMR spectroscopy).

For NMR measurements, plasma samples were filtered using Nanosep® Centrifugal Devices with Omega™ Membrane (Pall Corporation) with a 10K molecular weight cut-off. To remove trace amounts of glycerine and sodium azide, all filters were washed six times (centrifuged at 14000× g for 5 min) with MQ water (500 μL), and centrifuged for 10 min after the 6th wash to make sure the filters were water free. Plasma samples were diluted 1:1 in a 75 mM phosphate buffer (pH 7.4). The diluted plasma (300 µL) was transferred to the filter and centrifuged at 14000× g for 60 min at 4°C. The extracted solution (200 µL) was transferred to a 3 mm NMR tube (Bruker match system), and samples were stored at -20°C until analysis. For 1H-NMR spectroscopy, samples were slowly warmed up to room temperature and measured at 310K (calibrated temperature) in an Avance III NMR spectrometer operated at 600.13 MHz. Each sample was transferred into the magnet, and equilibrated at 310K for 5 min. Subsequently, automated locking, shimming and 90° pulse angle determination was performed. For each sample 1H NMR NOESY datasets were acquired, and processed and aligned using the alanine signal (upfield resonance of the alanine doublet signal) at 1.49 ppm. From the aligned spectra, integrals for resonances of the metabolites of interest were selected and quantified. Concentrations of metabolites were calculated based on the number of hydrogen atoms for each metabolite selected.

The 5-HT concentration in platelet pellets was determined using a protocol adapted from Kluge *et al.* ([1999](#_ENREF_21)). Results were expressed in μmol/109 platelets (i.e. platelet 5-HT) and subsequently over total blood platelets in whole blood in μmol/L (i.e. blood 5-HT) by multiplying platelet 5-HT by the number of platelets counted in whole blood using a Sysmex (109 platelets/L).

MAO activity in whole blood was determined using a protocol adapted from Van Kempen*et al.* ([1985](#_ENREF_43)), which represents MAO activity that is almost completely (>95%) found on blood platelets. Results were expressed as total amount of formed 4-hydroxyquinoline in whole blood in μmol/L/h.

**References**

Goelema JO, Spreeuwenberg MAM, Hof G, van der Poel AFB and Tamminga S 1998. Effect of pressure toasting on the rumen degradability and intestinal digestibility of whole and broken peas, lupins and faba beans and a mixture of these feedstuffs. Animal Feed Science and Technology 76, 35-50.

Kluge H, Bolle M, Reuter R, Werner S, Zahlten W and Prudlo J 1999. Serotonin in platelets: comparative analyses using new enzyme immunoassay and HPLC test kits and the traditional fluorimetric procedure. LaboratoriumsMedizin/Journal of Laboratory Medicine 23, 360-364.

Myers WD, Ludden PA, Nayigihugu V and Hess BW 2004. Technical Note: a procedure for the preparation and quantitative analysis of samples for titanium dioxide. Journal of Animal Science 82, 179-183.

Short FJ, Gorton P, Wiseman J and Boorman KN 1996. Determination of titanium dioxide added as an inert marker in chicken digestibility studies. Animal Feed Science and Technology 59, 215-221.

Van Kempen GMJ, van Brussel JL and Pennings EJM 1985. Assay of platelet monoamine oxidase in whole blood. Clinica Chimica Acta 153, 197-202.