

Figure S1: Hypothetical free AA ²H enrichment (black) and protein-bound AA ²H enrichment over time calculated for a fast turnover protein ($k_1 = 0.104$; orange), medium turnover protein ($k_1 = 0.03$; blue) and slow turnover protein ($k_1 = 0.01$; green) following a plateau labelling (A; Eq. 4) and single bolus labelling (B; Eq. 5), both using the same quantity of tracer. For plateau labelling, the relationship of a daily top up dose to the initial dose has frequently been determined by experiment. The theoretical ratio of an initial bolus to a daily top-up dose can be derived as the inverse of BW ²H enrichment elimination rate constant($1/k_2$), as was done in this example.



Figure S2: Free Ala (red), Asp (green), Glu (blue), Gly (orange), Leu (brown) ²H enrichment (Ln MPE) and BW (black) ²H enrichment (Ln APE) against time in plasma (A), muscle (B) and liver (C). Each data point represents the mean \pm SD of 5 independent measurements, each of them collected from one of the analysed pens.



Figure S3: SDS 1D electrophoresis gel showing three albumin and two fibrinogen extracts. Albumin extracts showed a big band around 62 kDa corresponding to broiler chicken serum albumin (71.8 kDa) but also showed a signal at around 28 kDa which could correspond to broiler chicken apolipoprotein A-1 (30.6 kDa) which is the second most abundant protein in chicken plasma. Fibrinogen extracts showed signal almost exclusively at 3 different bands located between 62 and 49 kDa, a pattern that is identical to the one showed by crystallography-grade intact chicken fibrinogen and that would correspond to fibrinogen alpha, beta and gamma subunits.⁵⁶



Figure S4: Glu/Ala ²H enrichment ratio over time in the plasma free AA pool (red), muscle free AA pool (orange), liver free AA pool (brown), albumin-bound AA pool (green), muscle-bound AA pool (blue) and fibrinogen-bound AA pool (purple). Each data point represents the mean \pm SD of 5 independent measurements, each of them collected from one of the analysed pens.

Trial	1		2			
Experimental Group	Unchallenged	Challenged	Control Diet	Diet 1	Diet 2	
Birds per pen	7	7	7	7	7	
² H ₂ O dosed birds per pen	5	5	5	5	5	
Diet	Basal	Basal	Basal	Basal + LDFA	Basal + CDFA	
				(300g/ton)	(75g/ton)	
1h injection	Saline	LPS	LPS	LPS	LPS	

Table S1: Experimental design summary. LDFA: lemon-derived feed additive. CDFA: cucumber-derived feed additive.

Feed ingredient	Starter diet (0 to 14d)	Grower diet (14 to 25d)		
Corn	25.000	25.000		
DL-methionine	0.107	0.081		
L-Lysine HCl	0.234	0.266		
L-Threonine	0.097	0.105		
Minevita Bro	3.000	3.000		
Monteban 100	0.060	0.060		
Sodium bicarbonate	0.196	0.089		
Soya bean meal 47%CP + 2%CP	27.450	22.114		
Soya bean oil refined	1.880	3.072		
Soya beans Danex	7.500	7.500		
Vit Choline Chloride 60% Veg	0.010	0.010		
Xylanase	0.010	0.010		
Wheat enzymes	34.456	38.636		
Monocalcium phosphate	0.000	0.031		
Salt	0.000	0.025		

Table S2: Basal diet composition. Feed ingredients (g/100kg).

	Theory	Plasma	Muscle	Liver	% Muscle / Plasma	% Liver / Plasma	% Tissue / Plasma
Ala	4	3.36	2.57	2.45	76.59	72.97	74.78
Asp	3	1.69	1.92	1.94	113.06	114.64	113.85
Glu	5	3.71	3.36	3.67	90.36	98.87	94.61
Gly	2	1.10	1.31	1.16	119.02	105.86	112.44
Leu	1	0.94	0.80	0.54	85.86	57.66	71.76

Table S3: On the left, theoretical n(AA) values and calculated free AA n(AA) values from different free AA pools. On the right, n(AA) ratio (%) between different pools. Tissue represents an average between muscle and liver free n(AA).