IMMUNISATION OF CHICKS WITH SOMATOSTATIN IMPROVES GROWTH

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In our laboratory immunisation of hatchling chickens with somatostatin (SRIF) has promoted growth in some but not all experiments (Sutton and Westbrook, unpublished data). The present study was conducted to assess whether the variability in responses following immunisation might be related to nutrition and/or genotype.

Eighty chicks of mixed sexes and of each of two genotypes (Strain IM98 Ingham Pty Ltd, Packenham, Victoria; and Strain Cobb - Biadia Poultry, Tullamarine, Victoria) were allocated randomly to groups of 20 birds/genotype and maintained on deep litter. They were fed crumbles (Barastock Stockfeed Pty Ltd, Packenham, Victoria); for 21 days starter crumbles were fed, between days 22-24 a mixture (50:50) of starter: finisher crumbles were fed and thereafter finisher crumbles. Water was available ad libitum. Two groups of each genotype were offered feed ad libitum (AL) and the others were offered 90% (R) of the corresponding intakes for the genotype. All birds received intra-peritoneal injections on day zero of either placebo (NI birds) or SRIF [I birds; SRIF-14 (Novobiochem, Switzerland) in a proprietary delivery system (Inovax Pty Ltd, Nedlands, Western Australia); 8 μg SRIF/bird] followed by an oral dose of the same preparation on day 21. One group of birds from each nutritional level x genotype combination was immunised. All birds were sacrificed on day 43. Results are summarised in the Table.

Strain/treatment	AGR (g/day)	Fat pad (% BW)	Glucose (mM)	a-NH2-N (mM)	Insulin (ng/ml)	GH (ng/ml)
Cobb-NI-AL	56.3	2.2	10.9[a]	6.6	0.2[a]	1.0[a]
Cobb-I-AL	69.9	2.1	10.2[b]	5.7	0.4[b]	2.5[b]
Cobb-NI-R	64.9	2.0	11.6	7.8	0.2	2.6[c]
Cobb-I-R	58.1	1.8	11.5	5.7[b]	0.3	0.9[d]
IM98-NI-AL	68.8	2.1[a]	9.7	7.3	0.4	1.6
IM98-I-AL	70.9	1.7[b]	9.7	5.8	0.3	1.5
IM98-NI-R	62.1	1.5	12.6	7.3[a]	0.2	1.2
IM98-I-R	56.3	1.5	10.6	5.5[b]	0.2	0.8

a,b,c,d within genotype values with different superscripts differ significantly

Between about 14-30 days all birds developed bronchitis which was treated by adding antibiotic to drinking water. In spite of this there were indications that, by comparison with NI birds, the AL-I birds had greater absolute growth rates (AGR), and all I birds generally had lower proportions of body fat, and lower plasma concentrations of glucose; α-amino-nitrogen (α-NH_2-N), insulin and growth hormone (GH). Although differences were not always statistically significant the consistent trends lead us to conclude that in chicks of both strains, immunisation against SRIF increased growth, particularly in the AL-birds.

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