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RESEARCH

Project Title:

The effects of LinPRO® on the Fatty Acid Profile of Edible Broiler Tissues

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Background:

Omega-3 fatty acids have gained increasing amounts of attention, due to their potential benefits to human health. A potential strategy for increasing human dietary availability of Omega-3 fatty acids is through the development if functional foods. Since the fatty acid profile of broiler birds, is largely reflective of their diet, enrichment of poultry meat can be achieved naturally using alternative feeding strategies using feed ingredients that are high in Omega-3 fatty acids.

Objective:

The objective of this trial was to evaluate different feeding strategies, using a co-extruded flax product (LinPRO™), on the fatty acid profile of broiler meat.

Methodology:

288, male, ROSS 308 birds were housed in 8 mini-pens; each pen contained 12 birds. At 14 days of age, pens were randomly assigned to one of three treatments containing various inclusions of the co-extruded flaxseed product LinPRO™. Treatments consisted of : A) 5% in grower phase & 10% in finisher phase B) 10% in both grower and finisher phase and C) 10% in grower and 20% in finisher phases. At day 35 of the study period, 15 birds from each treatment group were sacrificed (total of 45 birds). The birds were processed into various commercial cuts and analyzed for total fat and total fatty acids including phospholipids using the AOAC 996.06 method.

Results:

Table 1: Omega-3 content of whole bird, breast, and thigh, of broiler birds fed varying levels of LinPRO™ (A: 5% grower- 10% finisher, B:10% grower and finisher,C:10% grower-20% finisher)

	Whole Bird			Breast Skin On			Thigh		
	A	B	C	A	B	C	A	B	C
Total n-3	6.21	7.54	9.57	7.07	7.06	11.55	6.11	6.80	10.20
Total n-6	14.37	15.48	16.11	16.65	14.63	17.84	15.91	14.04	15.89
n-6:n-3	2.31	2.10	1.68	2.35	2.07	0.08	2.60	2.06	1.55
C 18:3N3(ALA)	5.57	6.76	8.55	6.00	5.89	10.03	5.41	6.10	9.26
C20:5N3 (EPA)	0.18	0.21	0.31	0.31	0.36	0.46	0.16	0.17	0.24
C22:6N3 (DHA)	0.10	0.12	0.16	0.19	0.22	0.29	0.16	0.10	0.13

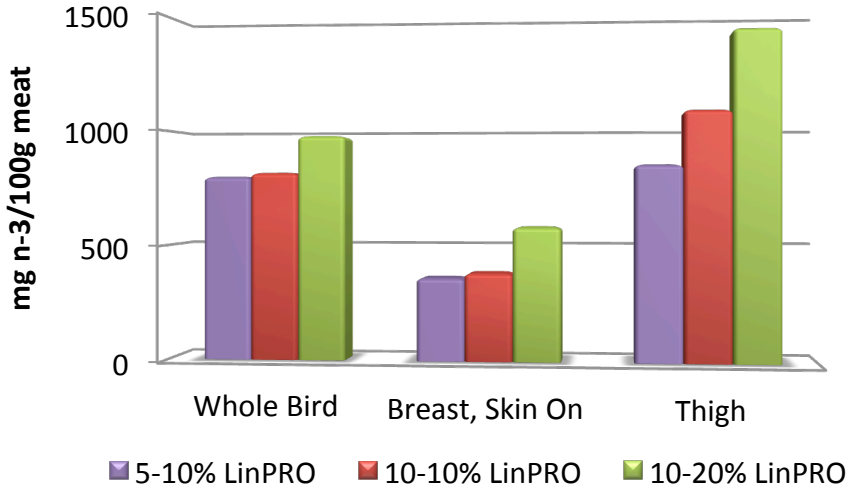

Figure 1: mg of omega-3 fatty acids per 100 g serving of edible broiler tissues of birds fed various levels of co-extruded linseed

Discussion & Conclusions

Results indicate that by increasing the level of co-extruded linseed in a broiler diet, the total omega-3 fatty acid content and ALA isomers of edible tissues will also increase. Treatment C (10-20% LinPRO®) resulted in the highest omega-3 concentrations in the meat with 9.57% F.A. in the whole bird,11.5 % F.A. in the breast and 10.20% F.A. in the thigh.

Feeding LinPRO®, up to 20% of the broiler's finisher diet, is an effective strategy for improving the fatty acid profile of broiler meat.

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