

Omega-3 Fatty Acid Enhanced Feed Effects on Growth and Acid Levels in Market-age Small Scale Utah Turkey Flocks

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PROJECT OVERVIEW

Hypothesis

With growing popularity of small scale turkey flocks and an expressed market demand for healthier perceived Omega-3 and Omega-6 fatty acid enhanced products, this study focused on the addition of flax seed to turkey diets. It was hypothesized that if flax seed was added into the diet of the treatment birds, then there would be a change to the turkey's overall molecular fat composition.

FOCUS

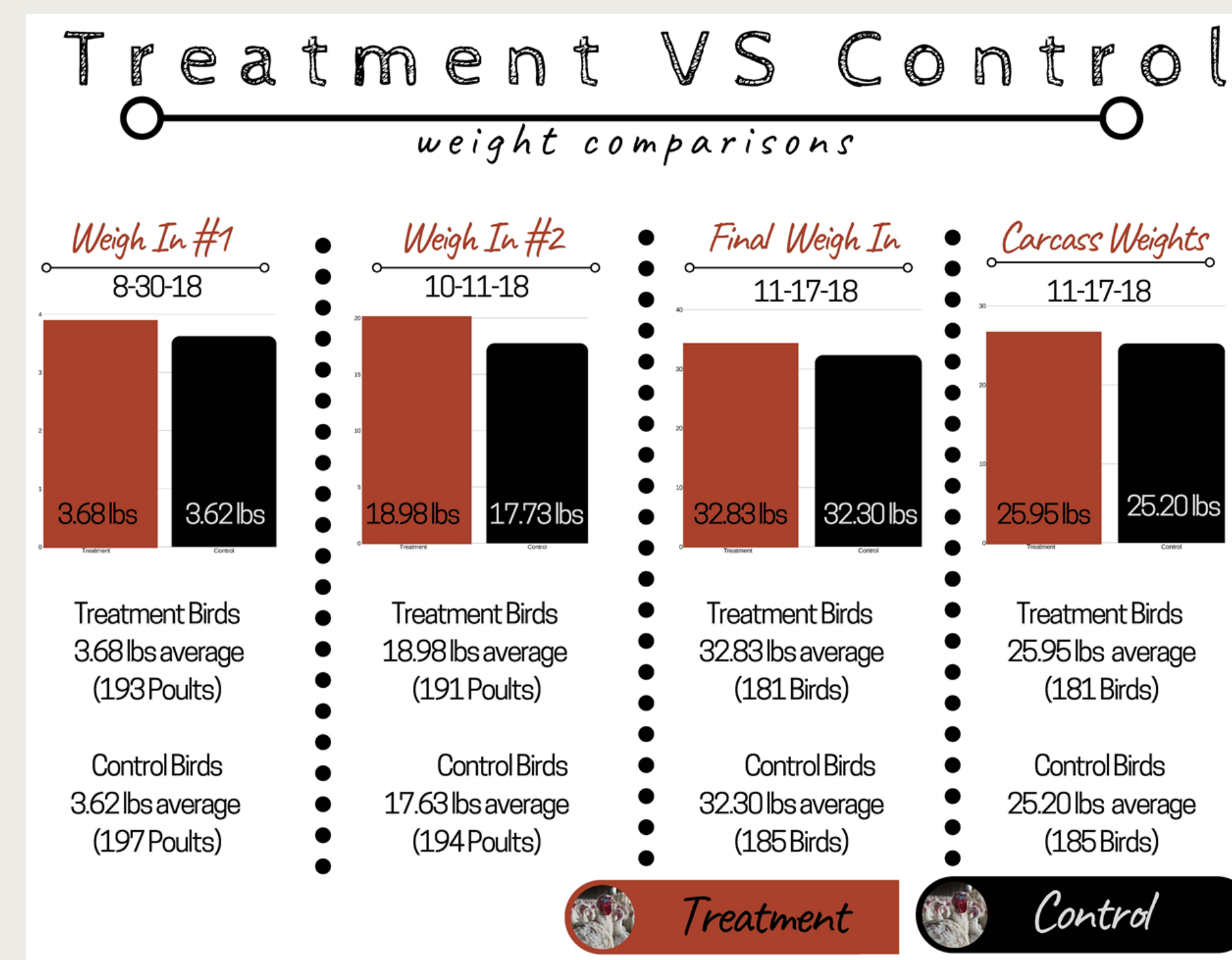
Research compared average daily gain, carcass dressing percentages, and intramuscular and external fatty acid levels of 200 flax feed additive treatment toms versus 200 standard control toms fed the same feed with no flax additive.



FINDINGS

Average Daily Gain

Although treatment toms fed flax additive weighed slightly higher across the research period than control toms, results showed no significant difference in average daily gain between research and control pens.



Dressing Percentages

All birds were weighed just prior to harvest and then immediately had a hot carcass weight taken. This gave pinpointed results on true dressing percentages. For the group of 366 remaining birds, average dressing percentage totaled 78.76%.



Omega-3

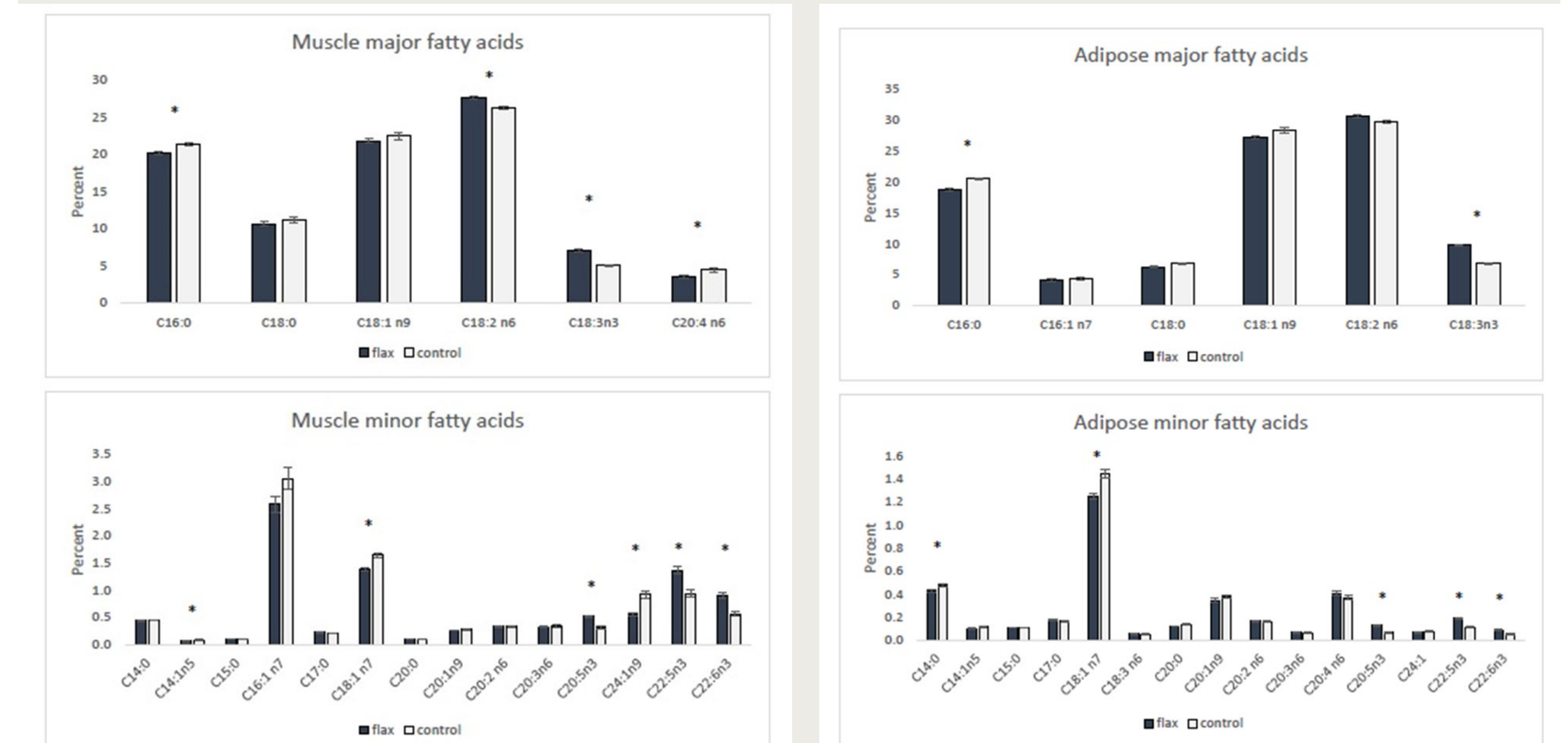


Figure 1: Major and minor fatty acids of muscle tissue from turkeys fed a control or flax-supplemented diet. An asterisk denotes significant differences between treatments as determined by the Student's T-test with Bonferroni correction.

Muscle (Figure 1)

In the major fatty acids, there was significantly more palmitic (16:0) and arachidonic (20:4n6) in the control birds, and more linoleic (18:2n6) and linolenic acids (18:3n3) in the birds fed the flax diets. In the minor fatty acids, the control birds had more of three monounsaturated fatty acids (14:1n5, 18:1n7 and 24:1n9), while the flax fed birds had more eicosapentaenoic acid (20:5n3; EPA), docosapentaenoic acid (22:5n3) and docosahexaenoic acids (22:6n3; DHA).

Adipose (Figure 2)

In the adipose tissue, there were two significant differences in the major fatty acids. There was more palmitic acid (16:0) in the control birds, and more linolenic acid in the birds fed the diets supplemented with flax. In the minor fatty acids, the birds fed the control diet had more myristic acid (14:0) and more vaccenic acid (18:1n7). On the other hand, supplementation of the diets with flax increased the relative proportion of EPA (20:5n3), docosapentaenoic acid (22:5n3) and DHA (22:6n3).

CONCLUSION

In comparing treatment to standard control turkeys, flax seed added to diets of treatment birds yielded a significant presence of both Omega-3 and Omega-6 fatty acids in both muscle and adipose tissues. No significant difference in average daily gain was discovered. A pinpointed dressing percentage of 78.76% was identified to help small scale flock producers gauge finished carcass weights.