

Effects of feeding recycled fatty materials on broiler chickens performance and carcass yield



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Introduction

The fatty materials generally used in the feed industry have very different origins and a variable composition. Some of them are waste or by-products from the food chain that generally contain noticeable amounts of detrimental substances.

Objective

The main objective was to evaluate the effects of including recycled fatty materials with different contents of Trans fatty acid (T), dioxins and PCBs (C), polycyclic aromatic hydrocarbons (PAHs, P) and oxidation products (O) in the feed, on poultry growth performance, carcass yield and fat deposit.

Material and Methods

4 ANIMAL TRIALS. In each:

64 female chicks ROSS 308 per experiment were allocated in 16 cages (8 replicates x 2 treatment) from 7 to 47 days of age. The dietary treatment per experiments consisted a common basal diet supplemented with 6% of recycled fat.

Table 1. Experiments and level of alteration in added fats

| T | | C | |
|---------|----------|----------|----------|
| Exp. | Trans FA | Exp. | Dioxines |
| Treat. | High Low | Treat. | High Low |
| % Trans | 12.4 0.7 | Contam.* | 28.8 9.6 |

| P | | O | |
|------------------|----------|-----------|-----------|
| Exp. | PAHs | Exp. | Oxidation |
| Treat. | High Low | Treat. | High Low |
| PAHs ng/g oil | 468 0.7 | % Polymer | 6.6 0.4 |

*pg WHO-TEQ PCCD/Fs+DL-PCBs/g oil

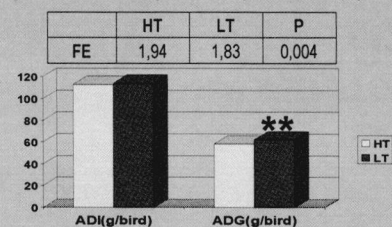
Results

Productive parameters.-

In the T experiment, LT animals presented a higher ADG (P = 0.005), and a lower FE (P = 0.004) compared to HT animals throughout the experimental period (Figure 1). The greater degree of saturation of the HT diet compared to the LT diet could have also contributed to this effect (HT: 84.8 and LT: 54.1 % saturated fatty acids).

No differences were observed in growth performance in the C, P and O experiments

Fig. 1. Trans fatty acid experiment (T)



ADI: average daily feed intake; ADG: average daily gain FE: feed efficiency (g feed/g weight);

Carcass yield and abdominal fat depot.-

With Trans (T), the birds from the low group (LT) showed higher FBW on day 47 of age (P = 0.006) and a higher mean percentage of AF in the carcass (P = 0,045) compared to HT birds. In the C experiment, the percentage of CY was significantly affected by the level of dioxins in the diet, being statistically higher in the HC compared to the LC treatment (P=0.002).

Fig. 2. Trans FA (T)

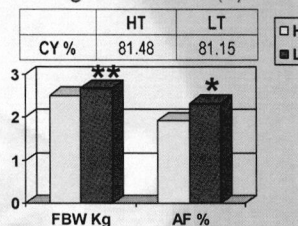
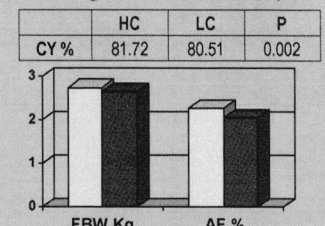


Fig. 3. Diox-PCBs (C)



FBW: final body weight; CY: carcass yield (%); and AF: abdominal fat content (%; as a percentage of the carcass weight)

No differences in any of the other traits studied were observed in the P or O experiments.

Conclusions

In general, the presence of dioxins and PCBs, PAHs and oxidation products in the diet did not affect growth performance in broiler chickens, at the studied levels of alteration. However, high levels of Trans fatty acids, associated to a greater proportion of saturated fatty acids, diminished average daily gain and feed efficiency of broiler chickens.

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