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## Meat and Muscle Biology™



## Quality Evaluation of Pigs Fed Poultry by Products in Their Diet

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## Objectives

The effect of consuming solely animal products in pig diet is the focus of this study. Thirty–six male Large White pig of 6 wk old of ages of 5.7 to 7.5 kg old were fed boiled poultry by products (poultry dead birds and hatchery waste) and compared with the conventional feed from plant source, P.K.C (Palm Kernel Cake)

## Materials and Methods

Pigs were reared for 10 wk, allotted into 3 treatments of 12 pigs per treatment, replicated 3 times, to evaluate for chemical composition, performance and digestibility studies, carcass and organ evaluation, serum and hematological parameters, physico–chemical analysis and palatability study, in a completely randomized design. Boiled dead birds BDB (T3) and Boiled hatchery waste BHW (T2) were compared with the conventional pig food PKC (T1).

## Results

T1 had significant highest values for fasted, bled, rib, thigh, shoulder, cecum, lungs, spleen, kidney, heart and intestinal weight compared to T2 and T3, but liver weight was significantly highest in T3 follows by T2. Daily weight gain, daily feed intake and body weight gain had highest ( $P < 0.05$ ) values of 107.45g, 105.31g and 4513.00g for T1 compared to T2 (37.52g, 63.39g and 1580.00g) and T3 (60.00g, 63.30g and 2500.00g), respectively. Feed Conversion Ratio was observed with the lowest ( $P < 0.05$ ) for T1 (0.98), follows by T3 (1.06) and then T2 (1.68). For apparent digestibility, crude fiber, ether extract, dry matter and NFE were ( $P < 0.05$ ) highest for T3 follows by T2, but lower for crude protein. T3 perform best in physico–chemical evaluation having the lowest ( $P$

$< 0.05$ ) for thermal and cold shortening, cooking loss and thaw rigor but highest ( $P < 0.05$ ) value for water holding capacity than for T1 and T2. Lymphocyte values and white blood cell performed best for T3 while T1 had the highest in monophils. T3 had the lowest significant cholesterol value (106.80 mg/dl), than T2 (336.76 mg/dl) and T1 (123.88 mg/dl) while T1 did best ( $P < 0.05$ ) in glucose content (84.92 mg/dl), compared to T2 (80.22 mg/dl) and T1 (66.63 mg/dl). Protein content had the highest values ( $P < 0.05$ ) in T3 followed by T2 in fresh muscle while the reverse was observed for ether extract. T2 and T3 made the highest ( $P < 0.05$ ) difference for palatability score when the muscle were boiled, for flavor, tenderness, juiciness, texture and overall acceptability than T1.

## Conclusion

T3 performed best, having the highest value for palatability scored, performance quality, physico–chemical analysis, lowest cholesterol and glucose content.

**Table 1.** Serum biochemistry parameter of pigs fed poultry–by–products in their diet

	T1	T2	T3	SEM
Glucose (mg/dl)	84.92 <sup>a</sup>	80.22 <sup>a</sup>	66.63 <sup>b</sup>	5.22
Ast (u/l)	13.64	11.50	14.09	3.64
Alt	2.48 <sup>b</sup>	3.68 <sup>a</sup>	4.24 <sup>a</sup>	0.25
Cholesterol (mg/dl)	123.88 <sup>b</sup>	336.76 <sup>a</sup>	106.80 <sup>c</sup>	58.76
Total Protein (g/dl)	9.28 <sup>b</sup>	7.73 <sup>c</sup>	13.37 <sup>a</sup>	0.68
Albumin (g/dl)	5.32 <sup>a</sup>	3.96 <sup>b</sup>	5.40 <sup>a</sup>	0.83
Creatinine (mg/dl)	4.99 <sup>a</sup>	1.83 <sup>b</sup>	1.50 <sup>c</sup>	1.03
Urea (g/dl)	44.06	55.38	52.32	9.54

<sup>a–c</sup>Means on the same row are significantly different ( $P < 0.05$ ).