

STUDIES ON USING TRA FISH (*Pangasius*) BY-PRODUCTS AND GOLDEN SNAIL (*Pomacea*) IN BROILER DUCK DIET

Vuong Nam Trung and Pham Huynh Ninh

The important strategy to limit and control the avian influenza in Mekong delta is changing the way of water-bird husbandry, especially scavenging ducks. According to the Decision No-10/2008/QĐ-TTg of the Primer Minister is to reduce the number of scavenging ducks and pay attention for semi or industrial ducks development. However, one of the challenges for the development of semi or industrial ducks is continuously raising completed feed price which makes many difficulties for farmer's investment and earn their profit. Using the local feed sources or agro-by-products, reasonably, is one solution for this problem. Tra fish (*Pangasius*) is a plentifully specific product of Mekong delta in Vietnam. In Tra fish processing industry, around 65-72% of body weight is by-product including head, small pieces of meat, bone, skin and digestive tract. This by-product, a good source of fat, calcium and phosphorous, can be used as feed ingredient for livestock (VASEP, 2009). Golden snail (*Pomacea*) damage the rice field, but they are a good protein source for water-bird (Trần Văn Hiến, 2009). The study on using Tra fish by-product and the Golden snail for livestock is limited in Vietnam, excepting some trials in local ducks with confined condition (Bùi Xuân Mến and Nguyễn Thành Công, 2010).

A total of 750 ducks at 21 day old (Super M x Nông Nghiệp) were allocated randomly into 5 treatments, with three replicates/treatment and 50 ducks/replicate. Ducks in all treatments are similar in weight, sex and feeding condition. At the end of experiment, 2 male and female ducks of each replication were killed to assess the meat quality. Feed was as mash form and fed ducks *ad libitum*.

Experiment design

Treatment 1: soybean meal is diet protein source

Treatment 2: 30% diet protein source was replaced by protein of Tra fish by-product (PP30)

Treatment 3: 60% diet protein source was replaced by protein of Tra fish by-product (PP60)

Treatment 4: 30% diet protein source was replaced by protein of Golden snail (OC30)

Treatment 5: 60% diet protein source was replaced by protein of Golden snail (OC60)

Data recording: feed intake, body weight, mortality, meat quality and economic efficiency.

Data analysis : data were analyzed by MINITAB software 15.0 (2007).

Time and location: the trial was carried out in Cần Thơ city in September, 2010.

Table 1. Body weight and weight gain of ducks

Items	Soybean meal	PP30	PP60	OC30	OC60	SEM	P
BW at 21 days (g/duck)	554	550	547	551	552	2,7	0.63
BW at 60 days (g/duck)	2289 ^{ab}	2276 ^{ab}	2105 ^c	2308 ^a	2186 ^{bc}	27.6	0.01

WG (g/duck/day)	44 ^{ab}	44 ^{ab}	39 ^c	45 ^a	41 ^{bc}	0.5	0.01
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BW: body weight, WG: weight gain

Means within row with different superscripts are significant difference (P<0.05)

The replacement of 30% soybean meal in the diets by Tra fish by-product or Golden snail had no effect on the BW and WG of ducks. However, at 60% of replacement trended to decrease the BW and WG. In the 21-60 day periods, duck fed diets PP30 and OC30 are similar in BW and WG in comparison with the control (2276; 2308 g/head vs 2289 g/head; 44; 45 g/head/day vs 44 g/head/day, respectively). Whereas, ducks received the diets PP60 and OC60 decreased BW and WG, significantly (2105; 2186 g/head vs 2289 g/head; 39; 41 g/head/day vs 44 g/head/day, respectively). These results are coincided with the studies of Ly Thi Thu Lan (2008), Bui Xuan Men and Nguyen Thanh Cong (2010).

Table 2. Feed conversion ratio and feed cost of ducks

Items	Soybean meal	PP30	PP60	OC30	OC60	SEM	P
DM intake (g/duck/day)	148.10 ^a	146.20 ^a	135.60 ^b	147.60 ^a	138.5 ^{ab}	2.92	0.03
FCR (kg DM/kg WG)	3.29 ^a	3.32 ^a	3.47 ^b	3.28 ^a	3.37 ^{ab}	0.05	0.04
Mortality (%)	6.00	5.33	7.33	4.00	8.00	-	0.44
FC/ kg WG (1000 VNĐ)	22.60 ^{3a}	19.03 ^{ab}	17.00 ^b	18.24 ^{ab}	15.78 ^b	1485	0.04

DM: Dry matter; FCR: feed conversion ratio; FC: Feed cost

The feed intake trended to decrease when the Tra fish by-product or Golden Snail were used to replacement to soybean meal in diet. With the diets PP30 and CO30, did not effect on the feed intake and FCR of ducks compared to the control diet (146.2 and 147.6 vs 148.1 g) and (3.32 and 3.28 vs 3.29), respectively. However, with the diets of PP60 and CO60 made a significant drop in feed intake (135.6 and 138.5 vs 148.1 g) and a significant increase of FCR (3.47 and 3.37 vs 3.29), respectively. The mortality trended to increase in the diets of PP 60 and CO60 (7.33 and 8.00%), but there was no significantly different among treatments. The replacement rate of PP30 and CO30 had improved 18.9-24.1% feed cost compared to the control diet.

Feather growing

Feather growing of ducks in the diets PP30, OC30 and OC60 is similar to it in control one. However it was slower in PP60 than others. Time and locations of feather appearance are as following: the breast, shoulder and wing feather at the day 20, 26, and 40, respectively. The glossy level of feather is as follow: soybean meal → OC30 → PP30 → OC60 and PP60.

Table 3. Meat quality of broiler ducks

Items	Soybean meal	PP30	PP60	OC30	OC60	SEM	P
Dressed carcass (%)	74.6	76.6	75.3	76.7	74.7	1.74	0.21
Breast meat (%)	12.6	11.3	10.5	11.6	10.8	1.66	0.12
Leg (%)	13.3	13.0	13.0	13.1	12.9	1.43	0.35
Visceral fat (%)	1.0	1.9	2.7	1.7	1.82	0.85	0.10

There is no significant difference on the meat quality in between treatments. However, increasing the replacement rate of soybean by Tra fish by-product or Golden Snail in the diets tended to increase the visceral fat rate.

The replacement of 30% soybean meal by Tra fish by-product or Golden Snail in the diets improved 18.9-21.1% feed cost without effecting to broiler duck productivity as well as meat quality.

REFERENCE

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VASEP- The Development Project for Production and Consumption of Tra fish in Mekong Delta to 2020”.