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Research Note

Effect of Breed on Slaughter and Carcass Characteristics of Adult Male Chickens

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ABSTRACT

An experiment was conducted to study the effect of breed on slaughter characteristics, cut-up parts, meat, bone and skin yield of adult male birds. Twenty seven male birds of about one year age belonging to four breeds namely Australorp (4), Naked Neck (8), White Cornish (5) and White Leghorn (10) maintained in the college farm were slaughtered in the Department of Livestock Products Technology and the data were collected and analysed. White Cornish birds recorded significantly higher ($P<0.05$) live weight compared to Naked Neck, Australorp and White Leghorn breeds. Similar trends were observed for carcass, meat and bone yield on weight basis for different breeds and these differences were significant ($P<0.05$) except between Australorp and White Leghorn. When expressed as percentage of live weight dressed carcass yield recorded to be lowest in White Leghorn followed by Australorp, Naked Neck and White Cornish. Among the cut-up parts, back contributed highest followed by breast, thigh, drumstick, wings and neck to the carcass weight in all the three breeds except White Cornish in which breast was the highest contributor. Yield (%) of back and drumstick varied significantly ($P<0.05$) among the breeds, whereas, yield (%) of other cut-up parts did not show any significant variation. Naked Neck breed yielded significantly lower ($P<0.05$) amount of skin compared to White Cornish. All the carcasses were almost devoid of separable fat. Based on the data it was concluded that White Cornish males were producers of higher quantity of carcass, meat and bone with lower amount of inedible by-products followed by Naked Neck, Australorp and White Leghorn, respectively.

Key words: *Adult male chickens, Breeds, Slaughter characteristics, Carcass characteristics.*

Chickens are selected and bred to produce either large numbers of high quality eggs or vigorous rapid growing off-spring with thick chunky breasts and meaty thighs and drumsticks (Parkhurst and Mountney, 1997). Broilers are the major sources of fresh ready-to-cook chicken, whereas, spent layers are the cheapest sources of raw materials for different ready-to-eat processed poultry products for marketing. All the modern broilers and layers are products of cross breeding in 2-way, 3-way, 4-way or multi-way cross. Usually strains of Cornish are used as the male line in the production of broilers and breeds belonging to Mediterrean class, especially Leghorns are involved in the breeding of layers (Sreenivasaiah, 1998). Therefore, maintenance of pure lines of chickens and monitoring of their meat production potential are vital for the sustenance and growth of poultry meat sector. With these points in view the present investigation was undertaken to study the effect of breed on slaughter and carcass characteristics of adult male chickens.

Twenty seven male birds of around one year age belonging to four different breeds namely Australorp (4nos.), Naked Neck (8nos.), White Cornish (5nos.) and White Leghorn (10nos.) maintained in the College farm were slaughtered in the semi-automatic poultry dressing plant of the Department of Livestock Products Technology following standard slaughter and dressing procedures. All data pertaining to slaughter and

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carcass characteristics (live weight, carcass weight, giblet weight, weight of inedible offals) were collected from the individual birds using an electronic digital balance (Essae-Teraoka). Dressed birds were chilled overnight in a walk-in cooler (4 ± 1^0C). Each bird was divided into six cut-up parts viz. breast, back, neck, wings, thigh and drumstick and weight of the individual cut-up part was recorded and percent yield was calculated based on dressed weight. Cut-up parts of individual birds were deboned manually. Total meat, bone and skin obtained from different cut-up parts of an individual bird were weighed separately for proper recording. The data obtained were pooled and subjected to statistical analysis (Snedecor and Cochran, 1989).

Results pertaining to the slaughter characteristics of adult male chickens of different breed are presented in Table 1. Birds of White Cornish breed had significantly higher ($P< 0.05$) live weight (3.62kg) compared to birds belonging to Naked Neck (2.79kg), Autralorp (2.15kg) and White Leghorn (1.89kg) breeds but no significant differences were observed in live weight of Autralorp and White leghorn bird. The same trends were noticed in case of carcass weight of birds. Although White Cornish birds had significantly ($P< 0.05$) higher dressing percentage (DP) than Australorp and White Leghorn, no significant differences in DP were observed between Naked Neck and White Cornish Birds. On the other hand White Cornish produced lower giblet percent (2.58) compared to other breeds (3.42-3.58) and lower percent of inedible byproducts. These differences in slaughter characteristics might be due to breed differences. Birds belonging to heavy breeds tend to produce higher carcass weight and lower inedible offals. Similar to the findings of the present study Pal *et al.* (2003) reported high live weight (3.62kg), DP (75.13%) and low inedible offals (21.03%) in adult Vanaraja birds. Similarly, Mandal *et.al.* (2004) recorded low live weight, carcass weight, DP and higher inedible offals in adult White Leghorn birds which were almost similar to the observations recorded in the present study.

Among the cut-up parts (Table-2) White Cornish birds produced comparatively higher proportion of breast (24.81%) and thigh (20.19%) and lower proportion of back (20.74%) than birds of other breeds (21.51-22.84% breast, 17.08 18.17% thigh and 23.09 25.94% back). Proportion of drumstick was comparable among Australorp, Naked Neck and White Cornish which was significantly ($P< 0.05$) higher than that of White Leghorn. Trends in the yield of cut-up parts recorded in the White Cornish birds were almost similar to the observations reported by Pal *et al.* (2003) in Vanaraja birds and Stadelman *et al.* (1988) in broilers.

Breed effect was significant ($P< 0.05$) in the production of deboned meat, bone and skin. White Cornish birds yielded highest amount of deboned meat and bone followed by Nacked Neck, Australorp and White Leghorn birds. However, Nacked Neck, Australorp and White Leghorn birds produced significantly ($P< 0.05$) lower amount of

Table 1: Slaughter characteristics of different breeds of adult male chickens (Mean+_ S.E)

Traits	Breeds			
	Australorp	Naked Neck	White Cornish	White Leghorn
No. of obs.	4	8	5	10
Live wt. (kg)	2.15±0.09^{c}	2.79±0.16^{b}	3.62±0.12^{a}	1.89±0.08^{c}
Carcass wt (kg)	1.57±0.09^{c}	2.07±0.13^{b}	2.77±0.09^{a}	1.28±0.06^{c}
Dressing (%)^{x}	72.54±1.33^{b}	73.99±1.27^{ab}	76.55±0.37^{a}	67.40±0.68^{c}
Giblet (%)^{x}	3.42±0.29^{a}	3.55±0.15^{a}	2.58±0.38^{b}	3.58±0.18^{a}
Inedible By Products (%)^{x}	24.05±1.22^{b}	22.46±1.31^{b}	21.08±0.44^{b}	29.02±0.68^{a}

a, b, c Means bearing different superscripts differ significantly($P<0.05$); x expressed as percentage of live weight.

Table 2: Yield (%) of cut-up parts in adult male chickens of different breeds (Mean±S.E)

Cut-up Parts	Breeds			
	Australorp	Naked Neck	White Cornish	White Leghorn
No. of obs.	4	8	5	10
Thigh	17.08±1.10	17.85±0.83	20.19±0.68	18.17±0.38
Drumstick	17.52±0.63^{a}	17.33±0.60^{a}	17.77±1.11^{a}	14.37±0.52^{b}
Breast	21.51±0.53	21.66±0.76	24.81±0.78	22.84±0.86
Back	24.66±1.07^{ab}	23.09±0.76^{bc}	20.74±0.88^{c}	25.94±0.74^{a}
Wings	10.51±0.42	12.63±0.92	11.01±0.65	11.20±0.53
Neck	8.96±0.69	7.41±0.43	7.20±0.63	7.48±0.51

a, b, c Means bearing different superscripts differ significantly(P<0.05)

Table 3: Amount (kg) of meat, bone and skin produced by adult males of different breeds (MeanS.E)

No. of obs.	4	8	5	10
Meat	0.68±0.09^{c}	1.07±0.05^{b}	1.42±0.07^{a}	0.60±0.04^{c}
Bone	0.50±0.08^{b}	0.76±0.09^{a}	0.89±0.04^{a}	0.48±0.03^{b}
Skin	0.18±0.04^{b}	0.13±0.01^{b}	0.38±0.03^{a}	0.16±0.01^{b}

a, b, c Means bearing different superscripts differ significantly(P<0.05)

skin compared to White Cornish birds which might be due to differences in the body size and live weight among the breeds. No fat could be separated from the carcasses during deboning operation.

Based on the results it was concluded that among the four breeds, birds belonging to White Cornish breed produced carcasses with higher dressing percentage and also produced higher amount of meat and bone with lower yield of inedible by-products followed by birds of Naked Neck, Australorp and White Leghorn, respectively.

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