Table 5: The effect of breed and feed restriction on carcass traits

Breed	*Treatments*	*Traits*	
		Dressing %	*Giblets wt. (gm)*
Cubb	Control	$87.18^{a} \pm 0.40$	$159.00^{a} \pm 0.57$
	T1	$86.26^{ab} \pm 0.50$	$158.66^{a} \pm 0.67$
	T2	$83.72^{b} \pm 0.85$	$119.02^{c} \pm 0.57$
	T3	$76.68^{b} \pm 0.50$	$129.00^{b} \pm 0.57$
	T4	$69.46^{b} \pm 0.80$	$104.01^{e} \pm 0.68$
	T5	$76.52^{b} \pm 0.55$	$127.33^{b} \pm 0.87$
	T6	$76.03^{c} \pm 0.35$	$114.00^{d} \pm 0.55$
	TOTAL	79.40 ± 0.56^{A}	130.14 ± 0.64^{A}
Hubburd	Control	$81.06^{a} \pm 0.20$	$154.40^{a} \pm 0.83$
	T1	$80.76^{a} \pm 0.51$	$150.60^{b} \pm 0.60$
	T2	$62.83^{e} \pm 0.32$	$124.42^{d} \pm 0.53$
	T3	$79.26^{b} \pm 0.31$	$125.25^{c} \pm 0.55$
	T4	$74.10^{c} \pm 0.15$	$102.20^{g} \pm 0.53$
	T5	$74.10^{c} \pm 0.15$	$104.40^{e} \pm 0.52$
	T6	$73.06^{d} \pm 0.12$	$103.30^{f} \pm 0.63$
	TOTAL	75.02 ± 0.25^{B}	123.51 ± 0.59^{B}

*Means of different levels within the same column with small letters having different superscripts are significantly different ($p < 0.05$). *Means of different levels within the same column with capital letters having different superscripts are significantly different ($p < 0.05$).

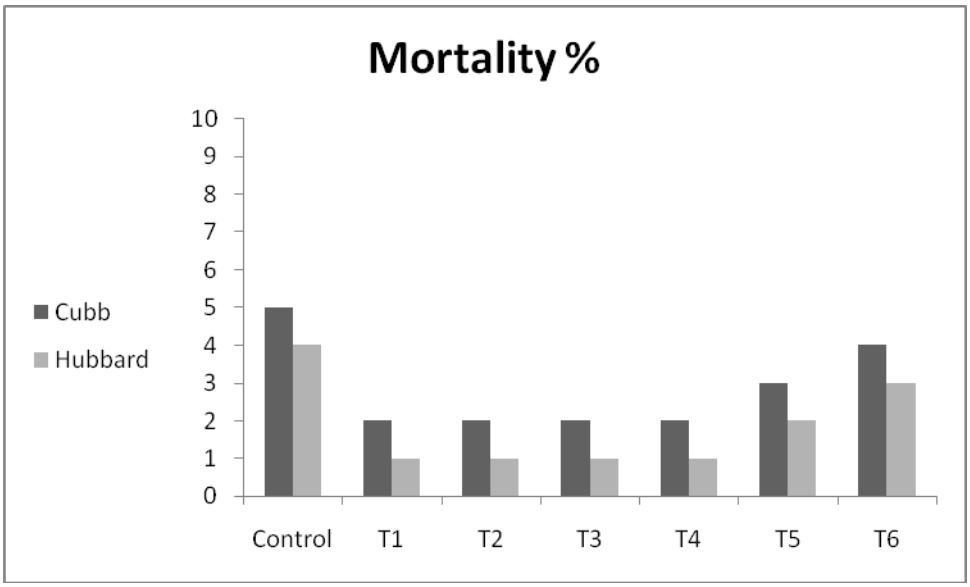

Figure 1: showed the effect of breed and feed restriction on mortality%.

The effect of breed and feed restriction on mortality % is shown in figure (1). We can demonstrate that the mortality rate was significantly higher ($p<0.05$) in Cobb breed (28.57%) than the Hubbard one (18.57%) and this may be due to increase the body weight and gain especially at the end of the experiment. Under the effect of treatment the control group showed the highest non significant ($P>0.05$) mortality %, followed by 8 hr feed restricted group from 30-40 days of age in the two breeds, while the lowest percentages were obtained from 10-30 days of age whatever at 8 or 16 hrs feed restricted groups in the two breeds.

4. Discussion

The findings of this study revealed that the highest significant ($P\leq0.05$) measurements of live body weight, weight gain and better feed efficiency values under treatments were recorded for Cobb-500 broiler strain than the Hubbard one. These results are in agreements with those of ***(Hossain et al., 2011; Gonzales et al., 1998; Sarker et al., 2001 & 2002 and Abdullah et al., 2010)*** who indicated that Cobb-500 broiler strain achieved heavier body weight and higher weight gain than the other strains. The improved body weight gain of this strain, possibly due to higher feed intake and several other factors might be involved with here. Results also showed that feed restriction did not significantly affects on body weight and weight gain in the two breeds. The lack of significant effect of feed restriction systems on the live body weight and gain especially at the last weeks of age may be due to gradual physiological adaptation of the birds to the different feeding regimes and probably improving the efficiency of conversion of the feed available

to them and this may be associated with several investigator as ***Saber et al. (2011),*** who indicated that feed intake, body weight gain, feed conversion ratio (FCR) and final weight at 1-42 days were not significantly affected by feed restriction. Also, ***Offiong et al., 2002, Saleh, 2004 and Tumova (2002)*** stated that on 1-42 days, all treatments had similar body weight gain. Moreover, ***Deaton (1995)*** stated that restricting feed supply was found to have no significant effect on broiler performance during growing period. In addition, ***Benyi and Habi (1998)*** reported that chicks fed ad libitum grew faster and were found to be heavier than those on restricted feeding regimes. On the contrary, ***Sandilands et al. (2006)*** found that the weight of birds in all restricted treatments increased faster than that of control birds in the grower period. Also, ***Hassanien (2011)*** showed that feed restriction decreased significantly ($p<0.05$) body weight of all treatments at 2 and 3 weeks of age as compared to the control treatment.

The non significant effect of feed restriction on feed intake and efficiency were in agreements with those reported by ***Saber et al. (2011) and (Plavink and Hurwits, 1991)*** who cleared that feed intake and feed conversion ratio (FCR) were not significantly affected by feed restriction. The feed intake for ad libitum fed birds and restricted birds was not significantly different. The study of ***Fanooci and Torki (2010)*** showed that no significant difference in the overall FCR (9-49 d) between chicks fed the restricted and non-restricted control.

These result, also same with those described by ***Leeson and Zubair (1996)*** who stated that when the chickens are treated ration restriction, it will cause disruption of growth, but when the chickens get back normal intake of nutrients the growth will come back normal again. This phenomenon can be explained because the chicken consuming protein and energy of diet rations less than their needs. In addition, ***Jones and Farrell (1991) and Mahmud et al (2004)*** cleared that the feed conversion had no significant difference in 1-42 day. On the contrary, ***Hassanien (2011)*** showed that feed restriction decreased significantly ($p<0.05$) feed consumption in all treatments that fasted 8 or 6 h as compared by control treatment at 3 and 6 weeks of age.

Moreover, ***(Hassanabadi and Moghaddam, 2006) and (Sahraei and Shariatmadari, 2007)*** found that the feed restriction increase feed intake. The higher feed intake can be related to the hypertrophy of the gastrointestinal tract that occurs after the restriction period.

Concerning the carcass traits, Cobb birds showed the highest highly significant ($p\leq0.001$) dressing % and significant ($p\leq0.05$) giblets wt. (79.4% and 130.14 gm., respectively), compared to the Hubbard one (75.02% and 123.51 gm., respectively). In accordance to these results, ***Coneglian et al., (2010)*** concluded that Cobb breed, considered as having a rapid initial growth, was superior to Ross, which shows slower initial growth rate, carcass and cuts yield. Moreover, ***Fernandes et al., (2013)*** found that there was a significant difference ($p<0.05$) between breeds in carcass cuts. In addition, ***Stringhini et al. (2003)*** did not observe differences on yield carcass or cuts between breeds. Likewise**, Moreira et al. (2003)** did not find significant differences on the carcass yield when breeds selected for conformation were slaughtered at 42 or 49 days old, neither for males or females.

The results of this study also indicated that different feed restriction systems significantly affect the relative percentages of liver, gizzard, head, and giblets and the overall dressing percentage. These findings agreed with those reported by ***(Cherry et al., 1978; Washburn and Bondari, 1978)*** who reported that feed restricted birds have been shown to have lower carcass content at market age than birds fed ad libitum. On the contrary, ***Palo et al. (1995)*** and ***Hassanien (2011)*** indicated that restricted feeding did not affect the carcass characteristics and the relative weights of different organs, except the relative weight of liver.

In recent reports ***Fontana et al., 1992 and Scheideler and Baughman (1993)*** observed no effect of feed restriction regimens on carcass content***. On basilar et al., (2009)*** observed that 4 h daily feed removal had no significant effects on body weight, feed intake, feed efficiency, and carcass characteristics. Some studies have shown that feed restriction could decrease fat content and increase protein deposition in carcasses, thus resulting in the improved carcass composition ***(Jones and Farrell, 1992; Nielsen et al., 2003).***

Concerning the mortality rate, Cobb breed achieved a significantly higher mortality rate ($p<0.05$) (28.57%) than the Hubbard one (18.57%) and this may be due to increase the body weight and gain especially at an early age. Under the effect of treatment the control group showed the highest non significant ($P>0.05$) mortality %, followed by 8 hr feed restricted group from 30-40 days of age in the two breeds, while the lowest percentages were obtained from 10-30 days of age whatever at 8 or 16 hrs feed restricted groups in the two breeds.

Poultry nutritionist suggested that the high growth rate in modern broiler chicks is the main reason for this problem. These results were in consistence with ***(Deaton, 1995; Scheideler and Baughman, 1993)*** who found non significant difference between control and feed restriction groups. On the contrary, ***Bowes et al. (1998)*** in his experiments of feed restriction showed that SDS occurrence in feed restriction groups was 0 % and in ad libitum feed intake groups was 3.33 %.

5. Conclusion

In conclusion, Cobb-500 birds recorded heavier body weight compared to Hubbard classic birds. In general, the potential of feed restriction programs as a management tool, related to reduce maintenance requirements and consider one of the main techniques in growth curve manipulation for increasing production efficiency in broiler chicken. As well as, lead to economical saving in cost of feeding in broiler chicken production, thus may be usefulness for commercial broiler chick's production farms.

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