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I-SEEC 2012

Proceeding - Science and Engineering (2013) 7–11

Proceeding
Science and Engineering

www.iseec2012.com

Science and Engineering Symposium
4th International Science, Social Science, Engineering and Energy Conference 2012

Effect of gac fruit peel on growth performance and meat quality in quail finishing stage

C. Boonperm[a,*] , T. Thatong[b]

[a]*Program in Animal Production Technology, Faculty of Technology, Udon Thani Rajabhat University, Udon Thani, 41000, Thailand*
[b]*College of Agriculture and Technology, Nakhon Phanom University, Nakhon Phanom, 48000, Thailand*

Abstract

Completely randomized design (CRD) study on gac fruit peel was designed on growth performance, carcass and meat quality, on farm research at Nakhon Phanom University; 60 finishing quail were separated into 4 groups of treatment. Fourth group comprised 3 replications within 5 finishing quail. The treatments were, level of gac fruit peel on concentrate i.e control group were non-gac fruit peel (NGFP), 1% gac fruit peel (1% GFP), 3 % gac fruit peel (3% GFP), 5 % gac fruit peel (5% GFP). The data collected were, initial weight (IW), ultimate weight (UW) average daily gain (ADG), feed conversion ratio (FCR). Meat quality i.e., meat colors (L*, a*, b*) were measure 1 hr. and 24 hr. after slaughtering, cutting force (warner blaztler shear force), initial pH (pH1), ultimate pH (pHu). The data showed that, IW 152.33, 153.67, 152.33 and 153.00 gm. UW 182.33, 187.33187.87and 185.50 gm. Increasing weight 1.00, 1.12, 1.18 and 1.09 gm. ADG 24.06, 23.16, 21.70 and 24.14 gm/day. FCR 1.26, 1.31, 1.39 and 1.24.The meat color 1 hr were L* 37.17, 36.90, 35.83 and 35.53. a* 16.94, 15.67, 16.34 and 17.33. b* 8.55, 7.45, 7.30, and 8.55. 24 hr were L* 35.70, 40.27, 40.62 and 40.80. a*7.79, 7.08, 7.38 and 8.72. b*10.96, 11.66, 11.08 and 11.59. cutting force 0.18, 0.40, 0.45 and 0.47 kg. cooking loss 11.32, 17.49, 16.63 and 14.84 %, respectively.

Selection and/or peer-review under responsibility of Faculty of Science and Technology, Kasem Bundit University, Bangkok.

Keywords: Gacfruit peel, finishing quail, growth performance, meat quality

1. Introduction

In Thailand, most people use gac fruit as food, In Vietnam use for steaming rice with gac seed, can make a red color on steaming rice make aroma in gac seed have beta carotene than tomato and carrot, Beta carotene. Gac seed membrane of carotene beta-carotene content, rather than just wait 10 times more lycopene than tomatoes 12 times. Fatty acids and approximately 10 percent of the size of the beta-carotene from Gac were absorbed in the body because beta-carotene is soluble in fat (Suthathip, 2550). Lycopene is a carotene compounds Boyd serving as a pigment and light to the plants and the vegetable of the oxygen molecule (ROS) and the light is too bright.

* Corresponding author. *E-mail address:* cboonperm@udru.ac.th

Eating lycopene with anti-oxidation has been proven by the medical community because there is a reduced risk of coronary heart disease, prostate cancer, lung cancer and stomach cancer. The Gac seed membrane has more lycopene than any other fruit and is regarded as one of the best anti-cancer effects of lycopene (Suthathip, 2550). The aim of this study was to use Gac fruit peel on top in finishing quail feed and affect on growth performance, meat quality and carcass quality

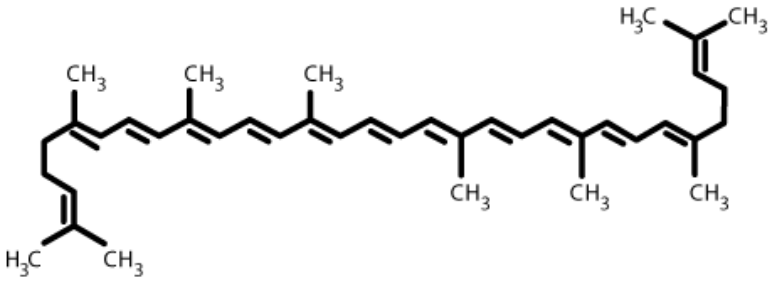

Fig. 1. Lycopene chemistry structure

2. Material and methods

This study used 60 finishing quail, Completely randomized design (CRD) was employed on gac fruit peel on growth performance, carcass and meat quality, on farm research at Nakhon Phanom University, 60 finishing quails were separated to 4 group of treatment. Fourth group comprised of 3 replications within 5 finishing quails. Feeding the quail by commercial feed has crude protein 19**.5,** crude fat 3, crude fiber 5, moisture 13 percentage**,** Treatment were, level of gac fruit peel on concentrate i.e. control groups were non-gac fruit peel (NGFP), 1% gac fruit peel (1% GFP), 3 % gac fruit peel (3% GFP), 5 % gac fruit peel (5% GFP), The data collected were, initial weight (IW), ultimate weight (UW) average daily gain (ADG), feed conversion ratio (FCR). Meat quality i.e., meat colors (L*, a*, b*) was measured 1 hr. and 24 hr. after slaughtering, cutting force (warner blaztler shear force), initial pH (pH_1), ultimate pH (pHu), according to Uriyapongson (2009)

3. Result and discussion

3.1 Growth performance

The data showed initial weight, final weight, pre slaughter weight, feed conversion ratio, FCR, which was not significantly different (P>0.05), see Table 1, The level of Gac fruit peel affected final weight, ADG, FCR than control group. Total feed intake 713.33, 770.34, 770.00 and 788.33 were significantly different (P<0.05)

The results were in the opposite direction to Sahin et al, (2005) It was reported that quails supplemented lycopene with effective control of eating entirely differently (P> 0.05) were 29.6 and 29.2 g per day, respectively Sevcikova et al, (2008), the effect is different on lycopene supplementation with sodium Celebration Night. The higher the rate of feeding of broilers decreased. The study is to be noted that Feeding the quail shell Gac has been rising at a higher rate of eating as well. This may be a result of the influence of the amount of substance Gac shell lycopene consumption resulting in the positive direction of the quail. However, no scholar wrote any report on the effects of lycopene.

Table 1. growth performance in finishing quail

Item	Level of Gac fruit peel				P-Value
	control	1%	3%	5%	
Initial weight (gm)	152.33	153.67	152.33	153.00	0.5354
nal weight (gm)	182.33	187.33	187.87	185.50	0.1776
Increasing weight (gm)	1.00	1.123	1.183	1.09	0.2957
Pre slaughter averagely weight / head (gm)	172.60	171.13	172.33	168.50	0.2610
Feed intake (gm/head)	713.33[b]	770.34[a]	770.00[a]	788.33[a]	0.0020
Feed conversion ratio	1.26	1.31	1.39	1.24	0.5083
Average daily gain(gm/day)	24.06	23.16	21.70	24.14	0.5468

[a,b] superscript within the row different significant ($P < 0.05$)

3.2 Carcass quality and carcass composition

The data that showed carcass quality and carcass composition, carcass weight, averagely carcass weight, carcass percentage, breast meat, *psos major*, leg, wings, rib, shank, were not significant ($P > 0.05$) within level of Gac fruit peel, see Table 3, because this trial time was short.

Table 2. Carcass quality and carcass composition

Item	Level of Gac fruit peel				P-Value
	control	1%	3%	5%	
Carcass weight (gm)	155.30	155.38	160.81	149.45	0.35
veragely carcass weigth (gm)	136.10	136.58	142.68	130.71	0.31
Carcass percentage	87.63	87.86	88.72	87.44	0.26
Psos major	5.72	6.00	6.24	6.32	0.49
Leg	21.84	21.68	20.63	22.97	0.27
wings	9.36	9.20	9.36	9.54	0.90
rib	36.20	36.04	38.74	34.43	0.45
shank	2.48	2.59	2.42	2.71	0.16
giblet	12.07	11.82	11.40	11.77	0.52

3.3 Meat quality

Meat quality of bird partridge fattening stage showed that the pH1 and pH - pH after killing in one hour and pHu or pH - pH after killing in 24 Hours of quail that had been reinforced shell Gac at different levels. It is found that the pH1 and pHu were not significantly different (P> 0.05), as shown in Table 4.4, which shows that the shell Gac the supplement in quail is the process of glycolysis of flesh out Partridge change until fracture. This difference may be due to the influence of the substance lycopene. And substance carotene in Gac shell features in the absorption in the body, as well as soluble in fat. A positive effect on the quality of the meat affects the quality of the food. Shear force and shear force values the breast of quail feed stage and the Cooking loss or the loss of water after cooking. Gac shell added at different times 0, 1,3, and 5 were 0.18, 0.40, 0.45 and 0.47, respectively, 11.32, 17.49, 16.63 and 14.84 percent, respectively, which were significantly different and statistically significant (P <0.05), as shown in Table 4.4 corresponding to Sevcikova et al, (2008) the lycopene supplementation with single chain Night Celebration in broilers and when added at higher shear force increased as well. The compound lycopene to the accumulation of fat in the body of the animal reduced the amount of chlorine Leste Coral. When the body has accumulated less As a result, the shear force of the meat increased as well. The result is good for meat with less fat, making a positive impact on consumer demand for healthy meat. However, considering the loss of the water after ripening showed a loss of more than the control group. This may be due to the accumulation of body fat. The binding between the water molecules ,protein and fat with low volume resulted in the loss of the water.

Table 3. Meat quality

Item	**Level of Gac fruit peel**				**P-Value**
	Control	**1%**	**3%**	**5%**	
pH1	5.85	6.13	5.8	5.89	**0.14**
pHU	6.03	5.64	5.8	5.79	**0.34**
Shear force	0.18^{b}	0.40^{a}	0.45^{a}	0.47^{a}	**0.05**
Cooking loss (%)	11.32^{b}	17.49^{a}	16.63^{a}	14.84^{ab}	**0.05**

^{ab} superscript within the row different significant (P <0.05)

3.4 Colour of meat

The study of meat colour fattening stage has been reinforced shell Gac at 0, 1, 3 and 5 percent of the value of brightness (L *) of the breast after killing one hour after killing 24 hours was not significantly different (P> 0.05), but the levels are higher Gac shell resulted in higher levels of brightness enhancement. It is showed that supplementation resulted in breast Gac shell changes color to the positive direction in order to make a statistical difference due to rearing in a short period of time only. The red (a *) of the breast after killing one hour after the killing of 24 hours with no significant differences are statistically significant (P> 0.05) to strengthen the shell Gac in higher levels have no effect. The value of the red meat of quail feed in the positive direction because it is grown in a short period of time. The yellow (b *) of the breast after killing one hour after killing 24 Hours of quail feed the expanding shell Gac level difference does not affect the color yellow (b *) of the breast, which do not differ statistically nor significantly different (P> 0.05), as shown in Table 4.4. The lightness (L *) of the skin after the killing of 24 hours of quail feed the expanding shell Gac at different levels affect the brightness tha is equal to 51.87, 56.16, 55.80 and 55.35, respectively, which are very different statistically and significantly

different (P <0.05) as shown in Table 4.4, which Schmitz et al (1991) reported on lycopene. A substance has a very good effect. "Anti-oxidants (Antioxidant)" in the body that Rico's delay the oxidation of fat, Low density lipoprotein (LDL) to lipid accumulation in animals has caused the oxidation less affecting the incidence of light. As a result, the brightness of the skin of the quail study is red value (a *) of the skin 24 hours after the killing of quail feed was added at the different Gac shell, which is not significantly different and statistically (P> 0.05) as shown in Table 4.4 It does not affect the value of the red meat of quail feed in the positive direction. The yellow (b *) of the skin after the killing of 24 hours of quail feed the expanding shell Gac at different levels are not significantly different at a statistical significance (P> 0.05) Table. 4.4 It does not affect the value of the flesh is yellow feed quail in a direction to increase

Table 4. meat colour

Item	Level of Gac fruit peel				P-Value
	control	1%	3%	5%	
L*1 h	37.17	36.90	35.83	35.53	0.28
a*1 h	16.94	15.67	16.34	17.33	0.06
b*1 h	8.55	7.45	7.30	8.55	0.20
L*24 h	35.70	40.27	40.62	40.80	0.33
a*24 h	7.79	7.08	7.38	8.72	0.56
b*24 h	10.96	11.66	11.08	11.59	0.84
L*24 h	51.87[b]	56.16[a]	55.80[a]	55.35[a]	0.05
a*24 h	6.43	4.49	5.73	4.92	0.45
b*24 h	21.01	20.74	18.62	19.54	0.82

[ab] superscript within the row different significant (P <0.05)

Acknowledgements

The authors gratefully thank College of Agriculture and Technology, Nakhon Phanom University, NPU for experimental unit, Food science and technology laboratory UDRU for all of the material in this study. Research institute, Faculty of Technology UDRU for financial supported.

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