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Sensory Attributes of Namakkal Quail-1 Meat

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Abstract To improve the meat quality of Japanese quail (*Coturnix coturnix japonica*), a new strain was developed by Tamilnadu Veterinary and Animal Sciences University named “Namakkal quail-1”. The purpose of the study is to know the sensory quality of the Namakkal quail-1. 24 Birds including 12 males and 12 females of 4th and 6th week birds were procured from Poultry farm Complex of Department of Poultry Science, Veterinary College and Research Institute, Namakkal and slaughtered as per the standard slaughter procedures after 4 hours of resting interval at the Department of Livestock Products Technology (Meat Science), Veterinary College and Research Institute, Namakkal. The sensory properties like colour, flavour, juiciness, tenderness and overall acceptability were estimated. Analysis of variance showed that age and sexes of the birds no significant effect on colour, flavour, juiciness, tenderness and overall acceptability of meat. But Namakkal quail-1 meat score higher than Japanese quail, Chicken, Duck and Geese meat in 9 point hedonic scale. It is concluded that Namakkal quail-1 meat is tastier than other poultry meat.
Keywords *Colour; Flavour; Namakkal Quail-1; Overall Acceptability; Tenderness*

1. Introduction

Quail meat is a delicious white meat with extremely low skin fat and cholesterol value. It is rich in micronutrients and a wide range of vitamins including B Complex, Vitamin E and K (Imchel, 2013). The percentage content of edible meat in Japanese quail is very high. Breast, leg and wing contain 37.3-38.7 per cent, 22.7-24.4 per cent and 35.9-37.8 per cent body weight, respectively. The protein, moisture and fat contents of raw quail meat are 20.54 per cent, 73.93 per cent and 3.85 per cent respectively (Panda et al., 1987). Quail meat is tastier than chicken and has less fat content. It promotes body and brain development in children (Imchel, 2013). It is also a good source of phosphorus, iron and copper. Many newer strains have been developed recently. Tamil Nadu Veterinary and Animal Sciences University developed a new quail strain named as “Namakkal Quail-1” during the year 2006. It is a meat type commercial hybrid and is produced by four way crossing of Japanese quail.

2. Materials and Methods

24 Birds including 12 males and 12 females of 4th and 6th week birds were procured from Poultry farm Complex of Department of Poultry Science, Veterinary College and Research Institute, Namakkal and starved for 4 hours and slaughtered as per the standard procedure in department of Meat Science and Technology, Veterinary College and Research Institute, Namakkal. Quails were slaughtered by decapitation. Following a 5 min bleeding time, feathers were removed along with skin by hand. Carcasses were eviscerated and deboned manually. The sensory properties of cooked breast meat samples were assessed by subjecting to a sensory analysis for colour, flavour, juiciness, tenderness and overall acceptability by semi trained sensory panel consisting of five members. The meat samples for sensory evaluation were coded and pressure cooked at 10 psi pressure for 10 minutes. The cooked samples were cut into small cubes of approximately 1.5 cm and served to the panellist with a nine point hedonic scale (Cover et al., 1962) as given in the score sheet. Then the results were analyzed statistically.

Table 1: *Mean (± S.E.) Sensory attributes of 4 and 6 weeks old Namakkal Quail-1*

Parameters	4th week			6th week		
	Male	Female	Overall Mean	Male	Female	Overall Mean
Colour	7.58±0.09	7.63±0.09	7.60±0.06	7.66±0.11	7.68±0.09	7.67±0.07
Flavour	7.65±0.13	7.43±0.17	7.54±0.11	7.58±0.08	7.63±0.18	7.60±0.09
Juiciness	7.78±0.11	7.73±0.13	7.75±0.08	7.43±0.13	7.53±0.20	7.48±0.11
Tenderness	7.61±0.14	7.53±0.12	7.57±0.09	7.68±0.27	7.48±0.13	7.58±0.14
Overall acceptability	7.65±0.10	7.73±0.08	7.69±0.06	7.66±0.10	7.78±0.10	7.72±0.07

No significant difference found

3. Results and Discussion

3.1. Colour

Colour is the first criterion consumer's use to judge meat quality and acceptability. Colour is mainly influenced by myoglobin content and nature, the composition and physical state of muscle and meat structure (Renerre, 1986). The sensory panel rating for colour ranged from 7.58 to 7.68 for 4th and 6th week birds. According to Akinwumi et al. (2013), in 9 point hedonic scale the colour scores were 7.2 for geese, 6.6 for chicken and 6 for Japanese quail, respectively (Table 1). The geese scored higher score in terms of colour followed by chicken and then Japanese quail. On comparing this to Namakkal quail-1, it scores higher. In the present study, colour of the meat had not significantly ($P>0.05$) affected by age of the birds.

3.2. Flavor

Flavour of the meat mostly depends on sex and age of the birds. As the age increases, the flavour of the meat also increases due to the increase in fat content (Lawrie, 1998). In the present study, flavour of the meat had not significantly ($P>0.05$) affected by age and sex of the birds. The score for flavours ranges from 7.54 to 7.60 for 4th and 6th week Namakkal quail-1 meat (Table 1). On comparison it was 6.0 for chicken, 6.9 for quail, 5.0 for geese and 5.9 for duck (Akinwumi et al., 2013). The Namakkal quail scores higher for flavour followed by Japanese quail, chicken, duck and geese. On contrary to this present study, in duck meat, the flavour of female meat scores higher than the male birds (Omojola, 2007).

3.3. Juiciness

Juiciness of meat is directly related to the intramuscular lipid and moisture content of the meat. In combination with water, the melted lipids constitutes a broth which when retained in meat is released upon chewing. In the present study the sex and age had no significant (P>0.05) effect on the juiciness of the meat. On contrary to this, Omojola (2007) reported that sex had significant effect on juiciness of duck meat. The Female bird meat scores higher than the male bird meat. The juiciness of the meat mostly depends upon the water holding capacity and cooking loss of the meat. Since the Namakkal quail-1 meat had less fat and no change in water holding capacity of meat, there was no significant change in juiciness of meat. Namakkal quail-1 meat found to have highest juiciness with score of 7.7 to 7.48 (Table 1). When compared to Japanese quail meat (6.4), chicken meat (5.1) and geese meat (3.8) (Akinwumi et al., 2013).

3.4. Tenderness

Tenderness is regarded as the most important sensory attribute affecting the meat acceptability. In present study, tenderness was not significantly (P>0.05) affected by age and sex of the birds. On contrary to this in duck, Omojola (2007) reported that tenderness was affected by sex of the birds. The male duck meat scores higher for tenderness than females. The age of the birds also had significant effect on tenderness of meat. The meat from 33 days old bird score higher than the 42 days old Japanese quail birds (Wilkanowska and Kokoszyński, 2011). According to Akinwumi et al. (2013), Japanese quails found to have the highest tenderness score of 6.10, followed by chicken (5.4), but the geese had significantly lower score. On comparison to all the above, Namakkal quail-1 meat scored high for tenderness.

3.5. Overall Acceptability

The overall acceptability of the meat determines the quality of meat. In the present study the sex and age of the birds had no significant (P>0.05) effect on overall acceptability of Namakkal quail-1 meat (Table 1). This was agreed with Omojola (2007) reported that overall acceptability were not affected by sex of the bird in duck meat.

4. Conclusion

Even though the sensory characteristics showed no significant difference between age and sex of the birds, the Namakkal quail-1 meat scored higher when compared to duck, geese, Japanese quail and chicken meats.

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