

BIOCHEMICAL PROFILE OF EMU MEAT

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Abstract: Meat is the main source of animal protein and its quality describes many of nutrients, biological and technological indicators. Proteins determine the nutritional value of meat, influence changes in the technological processes and physical-chemical parameters of meat. Health concern with respect to lipid profile is of prime importance. Emu meat is reported to have low cholesterol and high protein, ideal to replace the popular red meat. Hence, a study was conducted to estimate the protein and total cholesterol content of emu meat. The study was conducted in eight emu birds (one and half to two years of age) brought for slaughter at the Department of Meat Science and Technology, Madras Veterinary College, Chennai. Meat tissue samples from the drum stick region were collected and meat protein and cholesterol contents were assessed as per the standard protocol. The experimental data were statistically analyzed by student t test and the values were expressed as mean \pm SE. The mean overall protein content of the emu meat observed in the present study was 21.06 ± 0.82 per cent and the mean cholesterol content of emu meat observed was 45.38 ± 3.26 mg/100 g. The cholesterol content of the emu meat proves to be of a heart friendly and an alternative to beef.

Keywords: Emu, meat, protein, total cholesterol.

Introduction

Emu is the second largest bird in the world after the ostrich. Emus are reared primarily for their meat, leather and oil which are reported to have high economic value. Emu meat is cherry red in colour and low in calories and fat. The emu meat has significantly higher myoglobin content with twice the iron content as in other meats. Emu meat is also distinguished by the pharmaceutical properties of its oils and fats. Emu oil is rich in skin nourishing fatty acids including oleic, linoleic and linolenic acid. Though the advantages are discussed, emu industry is still in its infancy due to inadequacy of research to popularize its merit.

Exotic meats are gaining popularity in the global meat market, where health-conscious consumers are becoming increasingly careful in choosing lean alternatives over traditional

red meat (Daniel *et al.*, 2000; Hoffman and Wiklund, 2006). They are excellent sources of dietary nutrients and have quality attributes comparable to red meat (Suman *et al.*, 2010). Among the exotic meat species, meat from ratites (ostrich, emu, rhea, cassowary and kiwi) are perceived and marketed as a healthy alternative to other red meats due to its leanness, low cholesterol content and a favourable fatty acid profile (Sales and Horbanczuk, 1998). Emu meat has been touted as a good source of protein, B vitamins, bioavailable iron and creatinine (Pegg *et al.*, 2006) besides having a low fat content. Naveena *et al.* (2013) reported that the research on emu meat especially on slaughtering, composition and quality characteristics is limited.

Consumption of emu meat is recommended by the American Heart Association because of its leanness, low cholesterol content and a heart favorable fatty acid profile (Beckerbauer *et al.*, 2001). Hence, an attempt was made to analyze the biochemical profile of emu meat.

Materials and Methods

The study was conducted in eight emu birds (one and half to two years of age) brought for slaughter at the Department of Meat Science and Technology, Madras Veterinary College, Chennai. Meat tissue samples from the drum stick region were collected and meat protein and cholesterol contents were assessed. Protein content was estimated by digestion, distillation and titration using KJEL-E-TEK apparatus as per AOAC (1995) procedure. Total cholesterol contents were estimated as per the method of Allain *et al.* (1974). The experimental data were statistically analyzed by student t test and the values were expressed as mean \pm SE.

Results and Discussion

The mean overall protein content of the emu meat observed in the present study was 21.06 ± 0.82 per cent. The meat protein values ranged from 17.50 to 24.06 per cent. The value was in accordance with the reports of Daniel (1995) and Hoffman (2008) in the emu meat. Pegg *et al.* (2006) reported the crude protein content of emu meat ranged between 20.4 per cent and 21.1 per cent which was slightly lower when compared with beef and suggested that it may be due to the difference in the age, body weight of the birds and moisture content. Berge *et al.* (1997) reported that meat protein content increased with the age in emus with an age group between six and fourteen months of age and the mean content of the protein were similar to those generally found in the muscles of the ostrich. Sabbioni *et al.* (2003) also observed that the protein content increased with age in African black x blue neck ostriches slaughtered at different ages from 10 to 54 months old.

In the present study, the mean cholesterol content of emu meat observed was 45.38 ± 3.26 mg/100 g and the value ranged between 33.97 to 59.22 mg/100 g. Similar value was observed by Hoffman (2008) who reported that the range of cholesterol content in the emu meat was between 39–48 mg/100 g. Beckerbauer *et al.* (2001) reported that the cholesterol concentration of all sizes of meat cuts in emu averaged 32.2 mg/100 g irrespective of the diet. Frapple (1994) reported that the raw emu meat contains a cholesterol content of 39-48 mg/100 mg. On the other hand, Daniel (1995) reported a high cholesterol content of 98 mg /100 g in the raw emu meat and attributed the fact to the procedure used in the estimation of cholesterol. The cholesterol content was lower than the reports of Kowale *et al.* (1996) for mutton and Grau *et al.* (2001) for chicken. Andrews *et al.* (2000) reported a lower cholesterol concentration of 58 mg/100 g for emu meat.

In comparison with the meat of other livestock animals (Table 2) it can be inferred that the emu meat has an extremely low level of cholesterol and higher protein content.

Conclusion

In this experiment the protein and total cholesterol content of the emu meat has been determined. In comparison with the meat of other livestock animals it can be concluded that the emu meat is an excellent alternative for health conscious consumers which provides a low cholesterol content.

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Table 1: Mean \pm SE value of Meat biochemical parameters

Samples	Protein content (%)	Cholesterol content (mg/100g)
1	24.06	33.97
2	20.78	45.78
3	18.59	38.02
4	21.88	43.96
5	19.69	59.22
6	22.97	58.99
7	17.50	43.14
8	22.97	39.94
Mean \pm SE	21.06 \pm 0.82	45.38 \pm 3.26

Table 2: Comparison of various kinds of meat

Species	Protein content (%)	Cholesterol content (mg/100g)
Emu	23	45
Ostrich	22	55
Chicken	23	64
Beef	17.7	75
Turkey	23	64
Pork	17	72
Mutton	19.5	70