BREED YES, SEX NO – THE OSTRICH STORY

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Key words: ostrich, gender, genotype, sensory

Introduction

The South African Black (*Struthio camelus domesticus*) ostrich is more commonly found in South Africa (Madeiros, 1995) whilst the Zimbabwe blue (*Struthio camelus australis*) is more common in that country. These different subspecies of ostrich have different phenotypic characteristics (Freitag, 1992), including the size of the bird and the growth rate (Madeiros, 1995). The mature live weight for Zimbabwean Blue (Blue) ostriches is 125 kg compared to 115 kg for South African Black ostriches (Jarvis, 1998). The chicks of Zimbabwean Blue ostriches have a faster growth rate and normally reach a body weight of 95 kg earlier than chicks from the other subspecies (Jarvis, 1998). Therefore, the ostrich producer may benefit from crossbreeding Zimbabwean Blue ostriches and South African Black ostriches, especially if the offspring grow faster, are larger and still produce skin of the same quality as well as meat with a good eating and physical quality.

Extensive research has been done on physical meat quality differences between and within common domestic species such as poultry, cattle, etc. As the ostrich has only recently started to be used as a meat animal (Van Zyl, 2001), the influence of crossbreeding on meat quality has not yet been investigated intensively. Several authors have suggested that the crossbreeding of different genotypes of ostriches could improve overall performance. Currently, there is a tendency to crossbreed Kenyan Rednecks (Struthio camelus massaicus), Zimbabwean Blue and South African Black without scientific evidence to guide crossbreeding decisions (Petitte & Davis, 1999).

This study therefore evaluated the sensory quality of the more common South African Black (B) with that of the hybrid cross (C) between this species crossed to the Zimbabwean Blue. At the same time the effect of sex was also evaluated.

Material and Methods

The fan fillet (*M. iliofibularis*) of 12 pure Black Necks (B) was compared to that of 12 Black Neck x Blue Neck crosses (C). The *M. iliofibularis* has been identified as the most tender ostrich muscle, which is the reason that this particular muscle was used in this study. Samples of the *M. iliofibularis* were removed 24 h post mortem from 12 month old birds that had been reared under similar commercial conditions and slaughtered in a commercial abattoir using standard commercial procedures.

The individual muscles were vacuum packed, labeled and frozen for 30 days at -20ºC until analyzed. The meat samples were defrosted at a temperature of 2-4 °C for 24h. Meat samples were placed on foil-covered metal racks, which in turn were placed in coded oven bags (AMSA, 1987). Temperature probes were inserted into the center of all samples which were roasted at 160 °C in two Defy 835 ovens connected to a computerized electronic temperature control system (Viljoen *et al.*, 2001) to an internal temperature of 72 °C. After resting for 5minutes, cubed samples (1.5 x 1.5 cm) were taken from the center of each sample, wrapped in aluminium foil and placed in preheated glass ramekins and evaluated within 10 minutes.

An analytical sensory panel of eight trained members was used to establish whether differences between gender and breeds existed by means of the Triangle test. After differences between breeds were picked up by means of the Triangle test, an unstructured line scale (0 – 100mm) was used to quantify the differences between breeds using the same trained panel. The trained panel evaluated the samples for the following sensory attributes: juiciness, liver-like taste, tenderness and wild-ostrich aroma. The panellists were seated in individual booths in a temperature and light controlled room. Samples were served in a complete randomised order and coded with three-digit random codes. Crackers and distilled water were used to cleanse the palate between samples (American Meat Science Association, 1987). Within each line the sensory attributes of six males and six females were compared with each other to establish any differences that might occur due to gender. As all ostriches were reared under the same conditions and were slaughtered in the same manner and on the same day and any differences that might have occurred were thus not due to environmental differences. The four attributes that were measured, were juiciness, tenderness, liver-like taste and wild ostrich aroma.

Data of the Triangle test was analysed using the Roessler tables and data of the unstructured line scale was analysed using the t-test (Least Significant Difference) of the General Linear Models Procedure of SAS to compare treatment means at the 5% significance level (SAS, 1990).

Results and discussion

Using the Triangle test, the panel could not distinguish between the sexes within the breeds. A possible explanation for this could be that these ostriches were slaughtered at a relatively young age (ostrich only start breeding at x yrs of age) and it is known that gender differences in sensory attributes in farmed animals are only manifested in older birds.

Significant differences were, however, found between lines Blacks and Crosses when the Triangle test was used. When an unstructured line scale was used by the same trained panel to quantify the differences between the lines, no significant differences between the two breeds were detected for the four measured attributes (Table 1). The inconsistency of results could not be explained by panel error since the same experienced panel was used in both tests. The most likely explanation is that too few attributes were tested in the unstructured line scale method and that these attributes were not satisfactory in representing the product as a whole. Similarly, the inconsistency of results could also possibly be explained by the large variation in quality attributes between animals. A larger sample size may elucidate this phenomenon.

Table 1. Means for the sensory quality characteristics of ostrich meat as influenced by breed

Attribute	Blacks	Crosses	LSD
Juiciness	65.9	62.0	8.18
Tenderness	44.2	46.3	8.77
Liver-like taste	59.3	62.7	10.1
Wild ostrich aroma	54.4	51.9	8.69

Conclusions

Due to the consumer demand for lean meat with a suitable fatty acid and cholesterol content – characteristics of ostrich meat - this investigation tested whether there were any sensory differences between the traditional farmed black necks compared to their hybrids. As the analytical panel found no statistically significant differences between the two groups for the sensory attributes evaluated, it can be concluded that consumers will not be able to distinguish between the two groups. Within the genotypes, gender was found to have no effect.

Acknowledgements

The help of the staff of the Oudsthorn Experimental Farm in the care and maintenance of the ostriches is appreciated as is the help of Ms P du Buisson and E Moelich for the sensory analysis.

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