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## Organoleptic Characteristics of Fresh Meat Purchased from Public Market at Five Different Time

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# Organoleptic Characteristics of Fresh Meat Purchased from Public Market at Five Different Time

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## I. INTRODUCTION

For consumers to attain the best of taste and all the nutrients from meat they purchased from the meat retailers, then meat shops and abattoirs should adopt a very good preservative technology for their unsold meat (Lawal, 2013). One of the main purposes of food industry is to optimize preservation technologies of perishable foods, so as to reach a final product with optimal quality.

Flavour and tenderness are the most appreciated characteristics in lamb meat by consumers. While tenderness is probably the most important factor that determines acceptability in other species, such as beef (Boleman et al., 1997), flavour is very important for lamb meat (Crouse, 1983), followed by tenderness. Indeed, one of the main reasons some consumers reject lamb meat is its characteristic flavour (Cramer, 1983), which is very appreciated, instead, by other consumers as a feature making lamb meat more tasty than meat from other species. Altamura and Trimeticchio sheep are two genotypes reared in Apulia region, Southern Italy, which are threatened with extinction at the present time. Altamura breed is a triple purpose breed, which in the last years was reared, mostly, to produce wool for mattress; actually, the size meaning of breed is reducing year by year until to less than one thousand, mainly due to a dramatic drop in wool demand. Trimeticchio sheep was obtained at the Segezia Experimental Station of the Italian Istituto Sperimentale per la Zootecnia from a crossbreeding programme for the genetic improvement of meat yield and quality of the Gentile di Puglia breed. The present study carried out to investigate meat

organoleptic properties of Altamura and Trimeticchio lambs slaughtered at 42 and 70 days of age.

Safety and guaranteed quality of food are of great importance to current consumers.

Meat is a vital part of human diet and therefore there is an increasing demand for improving health factors related to its consumption (Šubrt et al., 2002). Consumers require consistently tender, flavourful meat with low fat contents (Homer et al., 1997). Beef quality in terms of chemical composition and sensory aspects is affected by many factors including breed (Chambaz et al., 2001; 2003) and nutrition (Geay et al., 2001). Meat from heifers of beef breeds is highly valued for its quality and culinary use and has the potential to meet the high requirements of today's consumers.

## II. MATERIAL AND METHODS

*Collection of Samples:* The meat samples were purchased from the Ipata main market from a particular butcher at five (5) different time (8am, 11am, 2pm, 4pm and 6pm), each time it is purchased, four small piece of meat is collected from the purchased for the four different methods of meat preservation, another part of the meat is also cut for sensory evaluation and the remaining part is taken to the laboratory for microbial load, this is the procedure all the pieces of the purchased meat for the five different method under go. Each meat sample is labelled with its time of purchase i.e sample 8 sample 11 etc.

## III. SENSORY EVALUATION

Each of the five meat sample is boiled and presented for sensory analysis, five (5) panelist was invited and the meat sample is served while the panelist record their observations using the nine (9) point edonic scale, panelist response is used for our data.

## IV. LABORATORY ANALYSIS

There are two types of analysis in the laboratory, this are fungi and bacteria as explained below.

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## Fungal

### a) Total viable count (TVC)

The media was autoclaved and 20 ml of sterilized Nutrient Agar medium measured into the plate. 100 $\mu$ L of the product was pipette into the Petri dish and swilled to mix aseptically. They were incubated at 35 $^{\circ}$ C for 24 hrs. The colony forming units were counted and recorded as CFU.

### b) Total Fungal count

The media were autoclaved and 20 ml of sterilized Potato Dextrose agar was measured into the sterile culture plates. 100 $\mu$ L of serially diluted sample (x10-6) were pipetted into the Petri dishes and swilled to mix aseptically. They were incubated at 35 $^{\circ}$ C for 3 – 5 days.

The colony forming units were counted and recorded as CFU.

### c) Total Coliform count (TCC)

The media was autoclaved and 20 ml of sterilized MacConkey Agar medium the plate. 100 $\mu$ L of the product was pipette into the Fetri dish and swilled to mix aseptically. They were incubated at 35 $^{\circ}$ C for 24 hrs. The colony forming units were counted and recorded as CFU.

## Microbial

### a) Total Bacteria count (TBC)

The media was autoclaved and 20 ml of sterilized Nutrient Agar medium measured into the plate. 100 $\mu$ L of the product was pipette into the Petri dish and swilled to mix aseptically. They were incubated 35 $^{\circ}$ C for 24 hrs. The colony forming units were counted and recorded as CFO.

## V. PROCEDURE FOR MEAT QUALITY EVALUATION

### a) Cooking loss

This was determined by cooking 20g of the breast and the thigh meat in water bath for 20 minutes at 80 $^{\circ}$ C. The difference in weight before and after cooking gives the cooking loss according to the procedure A.M.S.A, (1995)

### b) Chilling loss

This was carried out by cutting and refrigerating 20g of both the breast and thigh meat for 24 hours and the difference gives the chilling loss according to procedure of A.M.S.A,(1995)

### c) Drip loss

It was carried out by freezing 20g of breast and thigh meat for 24 hours and the difference in weight after freezing gives the drip loss A.M.S.A, (1995).

### d) Grill loss

This was carried out by oven drying 20g of breast and thigh meat till is consumable and the difference in weight gives the grill loss A.M.S.A, (1995).

### e) Thermal loss

Four centimeter (4cm) muscle length was cut from the breast and the thigh meat and subjected to heat at 80 $^{\circ}$ C temperature in water bath for 15minutes.The change in length gave the thermal loss. A.M.S.A,(1995).

## VI. RESULT AND DISCUSSIONS

The table 4.1 above shows the response of the panelist on beef purchased from Ipata market at five (5) different periods, as earlier stated and this periods was assigned letters A, B,C,D and E. It was observed that, there was significant different between the treatments analyzed (P<0.05).

There was no significant different in colour of the beef except the sample E that was purchased around 6pm (P>0.05)

No significant different was observed in flavor of the beef (P<0.05) except in sample A, sample E is the only different one in terms of aroma while all other sample. The texture of all the meat sample were all the same with no significant different in them. All the sample are same in terms of juiciness except the sample A that is highly significant when compare to others, but the overall acceptance is same no significant different occurred in any of the samples.

The colour of sample E that is different and significant may be as a result of the fact that the meat has stayed in the abattoir and enough microorganism has infected the meat and this caused a drastic change in the colour of the meat. This is similar to result obtained by Bowkers, 2014 in his experiment.

The flavor of sample A that is highly significant when compared with other sample may be as a result of the fact that the sample was purchased fresh immediately the animal was slaughtered. This is similar to what Bramblett 1959 obtained in his experiment.

Aroma of the sample E that was the least may be as a result of the sample that has been touched severally by series of interested buyer that did not later buy the meat again in addition to house fly that has touched the sample severally that made the aroma changed. This result is same with what Alvarado and Sams, 2004 got in their experiment.

The texture of the meat did not change irrespective of the time of purchase, this may be because the time of stay and amount of micro-organism that attacked the meat did not really make any change in the texture of the meat samples The result obtained is similar to what Van Laack and Lane, 2000 got in their experiment.

The juice of the sample A that was very high when compared with others may be as a result of the fact the sample was purchased immediately when the animal was slaughtered and all the juice and the nutrients of the beef is almost intact as compared to

those that has been drain by sunrays, attack by microorganism and touching from prospective buyers. This is similar to what Yu et al 2005 got in their experiment

Table 3.1: Organoleptic Characteristics of Fresh Meat

Parameter	A	B	C	D	E	SEM
Colour	60.00 <sup>ab</sup>	64.00 <sup>a</sup>	62.00 <sup>a</sup>	65.00 <sup>a</sup>	46.00 <sup>b</sup>	1.89
Flavour	68.00 <sup>a</sup>	51.00 <sup>b</sup>	49.00 <sup>c</sup>	57.00 <sup>b</sup>	50.00 <sup>b</sup>	1.94
Aroma	36.00 <sup>ab</sup>	34.00 <sup>b</sup>	39.00 <sup>ab</sup>	45.00 <sup>a</sup>	20.00 <sup>c</sup>	2.25
Texture	44.00 <sup>ab</sup>	38.00 <sup>b</sup>	37.00 <sup>b</sup>	46.00 <sup>a</sup>	45.00 <sup>a</sup>	1.09
Juiciness	69.00 <sup>a</sup>	53.00 <sup>b</sup>	48.00 <sup>c</sup>	46.00 <sup>c</sup>	42.00 <sup>c</sup>	2.54
Overall ac.	67.00 <sup>a</sup>	68.00 <sup>a</sup>	50.00 <sup>b</sup>	50.00 <sup>b</sup>	51.00 <sup>b</sup>	2.29

## VII. CONCLUSION AND RECOMMENDATIONS

### Conclusion

1. The meat sample purchased at 4pm followed by that of 11am has the best colour as expressed by the panelist.
2. The flavor of 8am meat has the best flavor
3. The Aroma and Texture of the 4pm meat sample was the best
4. Juiciness was well accepted by panelist for 8am and 11am meat so also the overall acceptability

### Recommendations

1. When meat is purchased and cooked immediately after slaughter all the organoleptic characteristics will still be intact.
2. Meat not sold or consumed by consumer or butcher should be properly preserved

## REFERENCES RÉFÉRENCES REFERENCIAS

1. Boleman, S. J., Miller, R. K., Taylor, J. F., Cross, H. R., Wheeler, T. L., (1997) Consumer evaluation of beef of known categories of tenderness. *J. Anim. Sci.* 75:1521-1524.
2. Cramer, D. A. (1983) Chemical compounds implicated in lamb flavor. *Food Technol.* 37(5):249-257.
3. Crouse, J. D., 1983. The effects of breed, sex, slaughter weight, and age on lamb flavor. *Food Technol.* 37(5):264-268.
4. Duckett S. K., Snowden, G. D., Cockett, N. E., (2000) Effect of the callipyge gene on muscle growth, calpastatin activity, and tenderness of three muscles across the growth curve. *J. Anim. Sci.* 78:2836-2841.EXPE
5. Hawkins, R.R., Kemp, J.D., Ely, D.G., Fox, J.D., Moody, W.G., Vimini, R.J., (1985) Carcass and meat characteristics of crossbred lambs born to ewes of different genetic types and slaughtered at different weights. *Livest. Prod. Sci.* 12:241-250.
6. Lynch, J.J., Hinch, G.N., Adams, D.B., (1992): The Behaviour of Sheep, p. 237 C.A.B. International and CSIRO, Australia, East Melbourne.
7. Naes, T., (1991). Handling individual differences between assessors in sensory profiling. *Food Qual. Prefer.* 2:187 -199.
8. Santos-Silva, J., Mendes, I.A., Bessa, R.J.B.(1997): The effect of genotype, feeding system and slaughter the quality of light lambs 1. Growth, carcass composition and meat quality *Livest. Prod. Sci.* 76:17-25.
9. Sanudo, C., Campo, M.M., Sierra, I., Maria, G., Olleta, J.L., Santolaria P., 1997. Breed effect on carcass and meat quality of suckling lambs. *Meat Sci.* 46:357-365. SAS. 1999. SAS/STAT User.
10. Owens, F., Secrist, D., Hill, W. & Gill, D. (2012). Acidosis in Cattle: A Review1. *Journal of Animal Science*, 76: 275–286.
11. Patolia H, Saikaew, W and Chaudhary, R (2007) Response of *Jatropha curcas* grown on chemicals *International Journal of environmental studies vol. 64, 2007 issue 6, 659-674.*
12. Penfield, M.P and Mayer, B. H (1975): Changes in tenderness and collagen of beef semi-Tendinosus muscle heated at rates. *Journal Food Sci.* 32:150-154. *Process. Preserv.*10:311-329.
13. Penny (1980) Role of endogenous proteases in meat tenderization. *Amer. Journal of meat Sc* 18(3)304-444.
14. Pharmacopoeia (2003). World Health Organization, Geneva. 3rd ed., v.5.