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Factors affecting chevon quality and their integration into industry practices (#148)

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Introduction

Goat meat (chevon) could become an ideal choice for health-conscious consumers due to its salubrious fatty acid profile compared to other meat types (Webb & O'Neill, 2008). However, there are some concerns with the eating quality of chevon. It is important to understand the factors that affect chevon quality and how they can be managed for enhanced quality. This paper discusses key factors and strategies for improving chevon quality in resource constrained environments.

Methods

This paper reviews scientific literature factors affecting chevon quality.

Results

The choice of breed is important for chevon quality. It is imperative to choose a breed with a potential for quality chevon production. Research has shown that the unimproved South African indigenous goats are suitable for commercial chevon production. A comparative study reported non-significant differences in objective meat quality properties between Boer goats and the so-called South African indigenous goats, in both the *longissimus* (LM)and *semimembranosus* (SM) (Pophiwa et al., 2016). These findings are important for the unimproved goats which have an anecdotal reputation of being inferior to Boer goats.

It is recommended to slaughter goats between the age of one and two years as meat from older goats tend to be tough. Warner Bratzler shear force (WBSF) values as high as 77.4 N have been reported for the SM of 8-teeth goats compared to 58.9 N for the 2-teeth group (Simela et al., 2004). Age at slaughter is important in Africa, where the markets are dominated by old culled goats. There is also a lower preference for meat from very young goats due to their less desirable carcass fat content.

Goat carcasses are very lean, predisposing them to cold shortening (CS) during chilling. Focus had been on feeding practices that improve the degree of fat deposition. Simela et al. (2004; 2011) showed the advantages of pre-slaughter conditioning (improved nutrition) in quality chevon production. The conditioned goats had increased carcass fat content (19.7% *vs.* 10.2%), showed slower chilling rates (19.6 °C *vs*. 13.5 °C at 3h p.m) and had lower WBSFvalues at 24 hours (65.9 N *vs.* 82.4 N) and a 96 hours p.m (57.8 N *vs.* 75.0 N) than the non-conditioned goats. The only potential conflict arising from increasing the level of carcass fatness is the current consumer perception against fat.

On-farm handling and transportation to the abattoir expose goats to stress which could affect meat quality. The stress is induced by stimuli such as noise, exercise, physical force, social disruption, unfamiliar personnel and novel environments (Kruger et al., 2016). Minimising fear through proper animal handling is important in reducing stress-associated effects on chevon quality. At the abattoir, goats should be allowed a resting period of at least 3 hours to recover from transportation stress. Provision of feed and water is necessary for extended lairage periods of more than 18 hours in order minimise economic losses due to stress and live weight shrinkage (Kannan et al., 2000).

The commercial chilling conditions (0-4 ℃ until 24h) are not "ideal" for goat carcasses as they result in CS and subsequent muscle toughnening. Controlling the rate of temperature decline is important in preventing the deleterious effects of CS . Pophiwa et al.(2016) showed that delayed chilling (10-15 ℃ for 6h, 0-4 ℃ until 24h) can minimise CS and improve chevon tenderness. In that study, the onset of *rigor mortis* (pH~ 6) occurred at elevated temperatures (13-17 °C) and the sarcomeres were longer than 2 µm, which gives an indication that CS did not occur. The LM had presumably an acceptable degree of tenderness at 24 hours p.m (av. WBSF = 43.4 N) but the SMwas tough (av. WBSF = 82.9 N), possibly due to a higher connective tissue content.

Electrical stimulation can accelerate the rate of pH with beneficial effects on meat quality. Pophiwa et al. (2016) confirmed the efficiency of electrical stimulation in improving chevon quality. However, the application of ES should be carefully monitored to avoid quality problems related to under- or over-stimulation. This is particularly important if other species are slaughtered in the same abattoir.

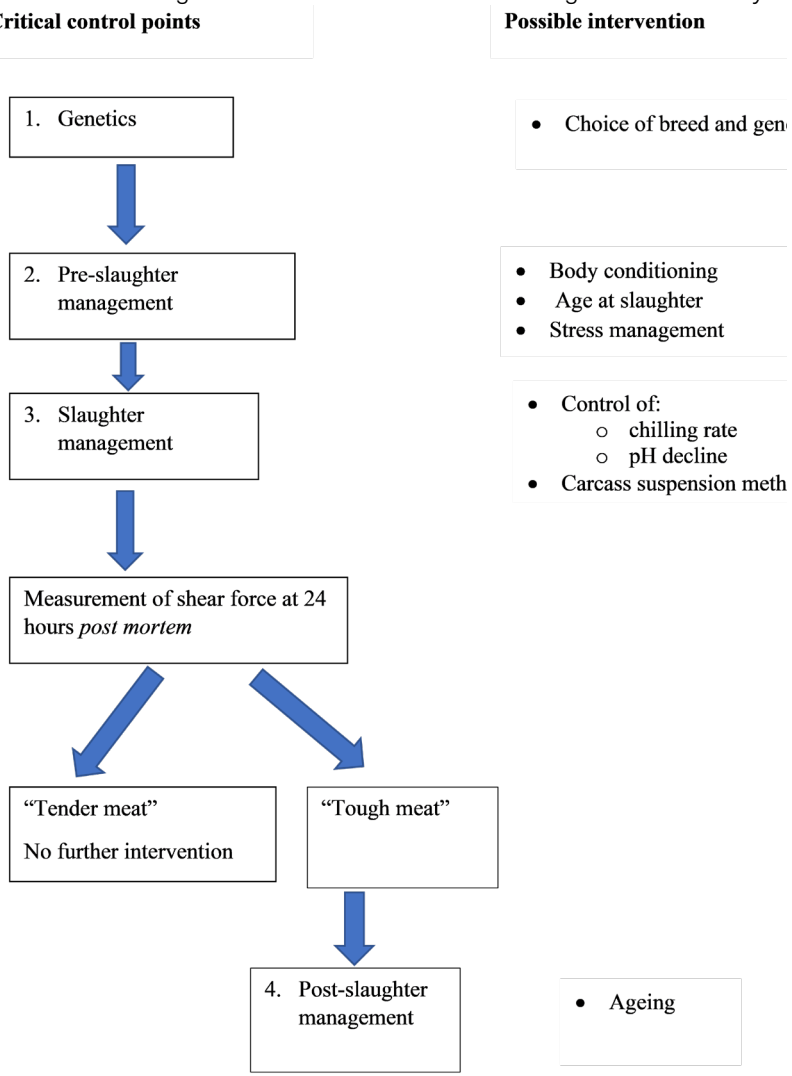
Suspending carcasses in such a way that muscles are restrained from shortening can improve meat tenderness. Basinger et al. (2019) showed that pelvic suspension effectively stretched the sarcomeres by 6-14% and improved chevon tenderness by 39-53% (WBSF ~25-38 N) compared to the traditional vertical suspension by the Achilles tendon. Pelvic suspension is recommended for small abattoirs, but it requires more chilling space compared to Achilles-hung carcasses.

Ageing period can further improve chevon tenderness. Simela et al. (2004) reported an increase in tenderness by 12% in SM of goats during a 96-hour ageing period. However, ageing could result in economic losses due to a tendency for chevon to discolour within 4 to 8 days of storage (Kanaan et al., 2001).

Notes

Conclusion

Effort has been made in enhancing chevon quality. Future priorities should focus on marketing and social awareness of goat meat. This will promote the consumption of chevon among diverse consumers and contribute to global food security.



Managing chevon quality in resource-constrained environments

Notes