

Linking consumer evaluations before and after consumption of beef

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Abstract

At the point of purchase there is a lack of consistently accurate cues to enable the consumer to evaluate the eating quality of beef. Eating quality is an after consumption evaluation which is difficult to link with before consumption evaluations as it is inconsistent and largely unrelated to visual appearance. A front of pack label which would accurately indicate eating quality could be beneficial for value recognition in a retail situation. The overall aim of this study was to determine Irish consumer's perceptions of beef eating quality and to use this information as a basis for the development of a total quality management system for the production of consistent eating quality which can be easily and accurately identified in a retail situation. In order to do this it is important to gain insight in to consumer's perception of beef quality. Consumers (n = 780) participated in sensory panels which were carried out according to the Meat Standards Australia guidelines. They consumed and evaluated 7 beef pieces of varying quality and cut. Each piece was scored on a scale of 1 to 100 for four palatability attributes and ranked as either unsatisfactory, good everyday eating quality, better than everyday eating quality or premium quality. Mean palatability scores increased significantly ($P < 0.001$) with increasing quality from unsatisfactory to premium. Consumers were able to differentiate between cuts, 38% of consumers ranked fillet as premium quality whereas 4% ranked topside as premium quality. Initial results indicate that Irish consumers would be ideal candidates to benefit from an accurate labelling system based on eating quality.

Introduction

Objectively eating quality can also be termed palatability which constitutes 3 main characteristics; tenderness, juiciness and flavour and is a function of production, processing and cooking methods used to prepare the beef for consumption. The subjective element of eating quality is based on consumer's perception of beef and comprises health, convenience, process and sensory dimensions. Consumers form subjective impressions of quality partly based on the level of previous knowledge. Before purchase, quality expectations are formed on the basis of quality cues available. Grunert *et al.* (2004) outlined the importance of both intrinsic and extrinsic cues which influence the selection of meat. Intrinsic cues are physical product characteristics such as palatability. For beef, intrinsic cues used to determine quality at point of purchase are misleading in terms of palatability as it is an after consumption evaluation. Irish consumers currently select beef according to its redness (Mannion *et al.*, 2000). However, apart from dark firm and dry beef (DFD), which is a problem usually associated with animal stress, (Viljoen *et al.*, 2002) colour is a poor indicator of palatability (Grunert, 1997). Another example of the potentially misleading cues used at point of purchase is the level of visible fat, which has a negative impact on quality expectations but a positive impact on palatability (Steenkamp and Van Trijp, 1996). As it is difficult to judge beef through intrinsic cues at point of purchase, extrinsic cues are increasingly important in forming consumer's expectation of beef quality. Extrinsic cues are related to the product but are not physically part of it (Grunert *et al.*, 1996). These include brand name, labels, presentation and price. Labelling beef may be a beneficial extrinsic cue as it has potential to relay intrinsic information in a consumer friendly manner.

Consumer satisfaction depends on the extent to which the product meets their expectations and a repeat purchase is unlikely if the sensory properties do not meet with these expectations (McIlveen & Bunchanan, 2001). However, consumers have difficulty in performing predictive quality expectations for beef (Brunso *et al.*, 2005). Providing consistent eating quality guaranteeing consumer satisfaction is problematic due to inconsistency in the palatability and lack of reliable intrinsic and extrinsic quality cues. These palatability cues must be consistently accurate in order to reduce perceived risk and gain consumer confidence. This is a challenging task due to the nature of beef itself. Beef is biochemically dynamic hence it is naturally susceptible to variation in palatability which is evident in the market place. This variation in palatability stems from a wide range of factors along the supply chain from farm to fork. For example breed, sex, age at slaughter, the use or not of intervention techniques post-slaughter such as electrical stimulation, hanging techniques and the chilling regime all influence palatability. The selection of beef cut by consumers at point of purchase combined with cooking method also has an affect on variation in palatability. Research by Maher *et al.* (2004) found variation eating quality traits of randomly selected Irish beef. Furthermore, surveys in the USA have shown that consumers have difficulty in selecting beef because they are unsure of

its quality (Miller *et al.*, 2001). Controlling this variation is a complex task, predicting eating quality before consumption would be beneficial as it would allow for beef to be classified according to quality, hence reducing overall variation. Currently in Ireland beef carcasses are classified according to the Official EU scheme (EC 1208/1981) for conformation and fat cover. These visually assessed characteristics are related to the value of the carcass through their effects on saleable yield and are not strongly related to eating quality. In order to improve the consistency of beef eating quality there is a need for a new grading system which takes into account the palatability of each cut. This would aid the conversion of intrinsic cues to extrinsic cues, increasing consumer satisfaction through the reduction of difference between before and after consumption evaluations.

Materials and methods

Sensory analysis panels were conducted according to the Meat Standard Australia guidelines. Consumers were contacted through clubs, societies and charity groups and screened for suitability; they had to be 'beef eaters' between the ages of 20 and 60. Consumers (n = 780) were invited to a central location where they were each presented with 7 small pieces of meat of varying quality (i.e. from different cuts) for evaluation. They rated each sample on a scale of 1 to 100 for the palatability attributes tenderness, juiciness, flavour and overall liking. They were also asked to rank the piece just consumed as one of the following: unsatisfactory, good everyday eating quality, better than everyday eating quality or premium quality. Six beef muscles (tenderloin, striploin, topside, outside, rump and blade) were selected to provide a range of poor to good quality for tasting. Beef was cooked to medium doneness. All statistical analyses were carried out using SPSS version 14.0.

Results and discussion

Consumers ranked their beef from unsatisfactory up to everyday eating quality and ranked the palatability attributes accordingly. Mean palatability scores increased significantly ($P < 0.001$) with increasing quality from unsatisfactory to premium. There was a significant difference ($P \leq 0.05$) in palatability scoring in the ranking of different cuts with better quality cuts such as the tenderloin consistently ranking significantly higher for all palatability attributes than the blade and the rump ($P < 0.05$). Consumers were able to differentiate between cuts, 38% of consumers ranked fillet as premium quality whereas 4% ranked topside as premium quality (Figure 1).

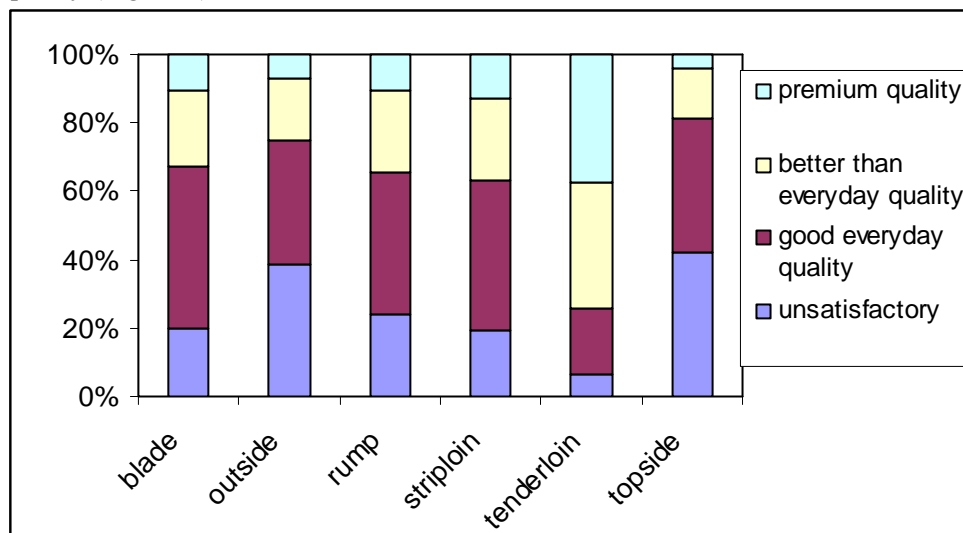


Figure 1. Beef cuts as a percentage of each quality category.

Consumer feedback has a vital role to play in the development of quality assurance as quality is ultimately judged by consumption. Consumers have a good knowledge of palatability attributes and can distinguish between cuts which have differing quality attributes. It would therefore be beneficial to use a brand or label which would make intrinsic characteristics extrinsic. This would enable consumers to form accurate expectations, which would improve consumer satisfaction as it would reduce the difference between expected quality and experienced quality. By building on consumer's knowledge of palatability, product differentiation through branding or other extrinsic cues may improve value recognition in retail situations. This would help consumers to link after purchase evaluations with before purchase evaluations.

Acknowledgements

The authors would like to acknowledge the assistance of Rod Polkinghorne and Alan Gee.

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