POLISH JOURNAL OF FOOD AND NUTRITION SCIENCES
Pol. J. Food Nutr. Sci. 2006, Vol. 15/56, No 3, pp. 287–289

SENSORY QUALITY OF PORK CHOPS AFTER THERMAL PROCESSING IN RELATION TO CONSUMER PREFERENCES BY PURCHASE OF MEAT – A SHORT REPORT

Agnieszka Połom

Department of Functional Foods and Commodity Science, Warsaw Agricultural University

Key words: pork, preferences of choice, sensory quality, thermal treatment

In this paper it was shown which combination of colour/ fat cover criteria by purchase might serve as an indicator of the sensory quality of pork chops after controlled thermal processing (cooking and roasting) and related consumer satisfaction. The overall sensory quality of pork loin samples, differing in colour and fatness as raw material, after cooking and roasting appeared to be mainly affected by their tenderness and softness; and to a lower extent by colour brightness. The results indicate that light-red colour of raw pork chops was related to its higher softness and tenderness after cooking; whereas the above tendency was less pronounced in the roasted pork loin. It appears that in consumer perception colour of raw chops can be considered as an indicator of the quality of cooked meat.

INTRODUCTION

The final element of animal production chain is culinary meat as well as a meat for further processing. Its first quality assessment is done by consumers who decide by purchase about the choice according to individual preferences and expectations. Consumers concept of food quality (including meat) is a degree to which the product fulfils their expectations [Bech *et al*., 2001]. When buying meat, the consumer expects its high quality (in hedonic terms) after culinary preparation for eating.

The expected quality of meat (mainly pork) evaluated by purchase has been investigated by several authors on a national [Sikora & Weber, 1995; Glitsch 2000] or international level [Becker *et al*., 2000] – although short shelf life and variability of meat samples are serious limiting factors of such studies. The replacement of meat samples with their digital images, arranged as an album of certain structure, allowed to overcome the above difficulties and enabled carrying out extended international consumer studies on pork chops preferences [Ngapo *et al.,* 2002].

Using the above technique the importance of 4 quality criteria (colour, fat cover, marbling and drip) of pork chops choice (packed on the trays) was previously investigated by the authors in a group of 480 Polish consumers. The experiment indicated that colour and fat cover appeared to be the criteria, consciously used by the consumers [Połom & Baryłko-Pikielna, 2004].

The objective of this study was to check to what extent a combination of colour/fat cover of raw meat might serve as a prognostic value for the sensory quality of pork chops after their thermal processing and related experienced consumer satisfaction.

MATERIALS AND METHODS

Samples of pork loin (*m. longissimus dorsi*), representing combinations of colour (light/dark) and fatness (fat/lean), were selected from prime-grade commercial loins by the meat quality expert (Farm Meat Company, Stanisławów). The appearance of samples was documented by digital images; pH of samples was controlled as well.

The samples were thermally processed with two methods (which mimic "cooking" and "roasting") under controlled conditions (Table 1), then cooled down to 20°C and individual uniform samples were prepared for a sensory evaluation. A 10-member trained panel performed a profiling analysis [ISO 13299.2:2003] in 2 replicates; 14 previously chosen and defined attributes and overall quality (OQ) were evaluated using properly anchored line scales.

TABLE.1. Conditions of thermal treatment.

Thermal treatment	Cooking	Roasting
Medium temp. (°C)	96 ± 2 (water)	150–160 (air)
Final core temp. (°C)	75	80
Weight of samples (g)	860–960	910–1100
Sample/medium ratio	1:2 (0.8% NaCl solution)	–
Thermal losses of samples (%)	30.1–34.7	24.7–29.9

RESULTS

Sensory profiles of loin samples after cooking and roasting treatments (Figures 1 A, B) revealed no or very little variation in colour hue, flavour and taste attributes, while they

Author's address for correspondence: Agnieszka Połom, Department of Functional Foods and Commodity Science, Warsaw Agricultural University, ul. Nowoursynowska 159C, 02-776 Warszawa, Poland; tel. (48 22) 593 70 40; e-mail: apolom@op.pl

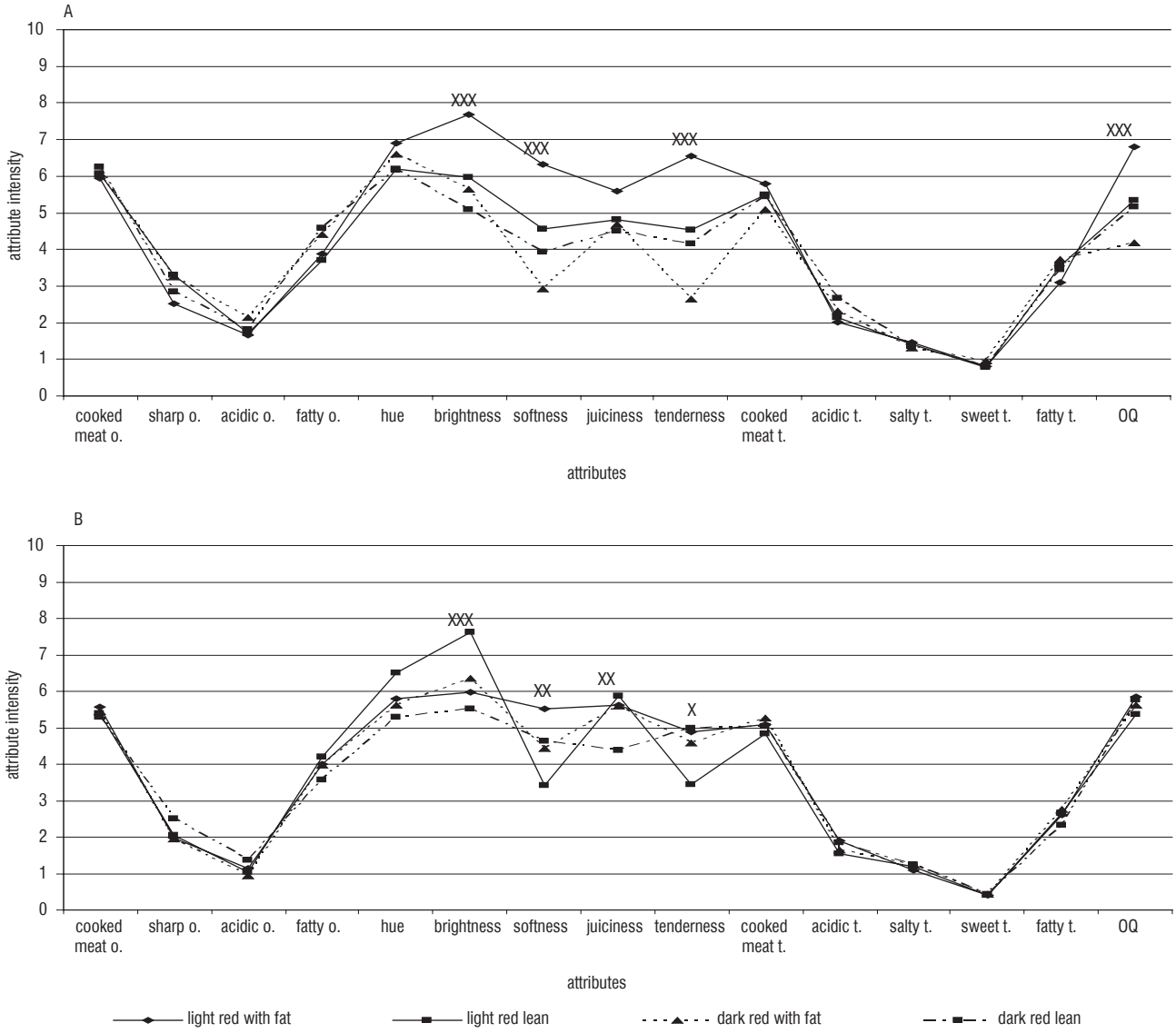

FIGURE 1. The profiles of pork loin samples after thermal treatment (based on one replicate): A – cooking; B – roasting. The experimental replicates are continued. Significance level xxx for p≤0.001; xx for p≤0.01; x for p≤0.05

differed significantly in colour brightness and texture attributes (softness and tenderness). The magnitude of differences was bigger in the cooked loin samples than in the roasted ones and more distinctively related to the overall quality. Loin chops of light colour preferred by most consumers when purchased appeared to be more soft and tender after cooking (Figure 2); such a relationship was not observed in the roasted samples (results not shown).

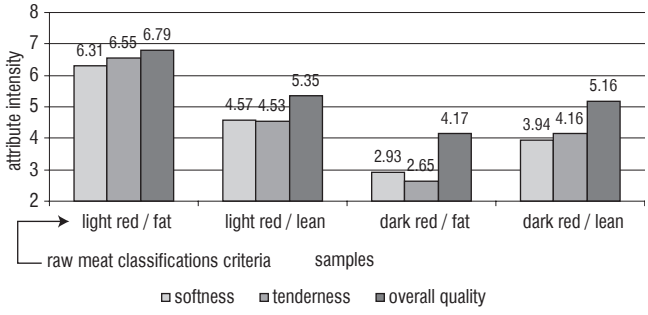

FIGURE 2. Relationship of softness and tenderness to overall quality of cooked samples.

DISCUSSION AND CONCLUSIONS

The results obtained suggest that the light colour of raw pork loin might predict its higher tenderness and juiciness after the thermal treatment. The tendency could be observed that fatty loins, light and dark, were more juicy and tender as their lean counterparts and of a higher overall sensory quality. The above relationship is not in accordance with consumer preferences by purchase who definitely preferred light red and lean loin meat, over the fat one.

REFERENCES

1. Bech A., Grunert K., Bredahl L., Juhl H., Poulsen C., Consumers' quality perception. 2001, *in:* Food, People and Society (eds. L. Frewer, E. Risvik, H. Schifferstein). Springer-Verlag Berlin Heidelberg, pp. 97–113.

2. Becker T., Benner E., Glitsch K., Consumer perception of fresh meat quality in Germany. Brit. Food J., 2000, 102, 246–266.
3. Glitsch K., Consumer perceptions of fresh meat quality: cross-national comparison. Brit. Food J., 2000, 102, 177–194.
4. ISO 13299:2003. Sensory analysis. Methodology. General guidance for establishing a sensory profile (QDA – Quantitative Descriptive Analysis).
5. Ngapo T.M., Martin J.F., Dransfield E., Consumer Preferences of Pork Chops: An Intern. Cross-Cultural Comparison. 2002, *in:* Congress Proc. 48th ICoMST, Rome, Italy, pp. 150–151.
6. Połom A., Baryłko-Pikielna N., The analysis of factors determining preferences of polish pork consumers. Żywność, Nauka, Technologia, Jakość, 2004, 3, 40, 7–23 (in Polish).
7. Sikora T., Weber P., An attempt to gauge consumer preferences of culinary meat. Gosp. Mięsna, 1995, 47, 1, 40–41 (in Polish).

Received January 2006. Revision received March and accepted May 2006.

JAKOŚĆ SENSORYCZNA KOTLETÓW SCHABOWYCH PODDANYCH OBRÓBCE TERMICZNEJ W RELACJI DO PREFERENCJI KONSUMENTÓW W TRAKCIE ZAKUPU MIĘSA – KRÓTKI KOMUNIKAT

Agnieszka Połom

Katedra Żywności Funkcjonalnej i Towaroznawstwa, SGGW, Warszawa

Przedstawiono wyniki badań określających kombinacje cech kotletów schabowych preferowanych w trakcie zakupu przez konsumentów, jako wskaźnika jakości sensorycznej po obróbce termicznej. Stwierdzono, że w ocenie sensorycznej ogólna jakość mięsa poddanego gotowaniu i pieczeniu okazała się głównie zależna od cech tekstury; barwa odgrywała w niej mniejszą rolę. Badania wykazały, że jasna barwa surowego mięsa (preferowana przez konsumentów w czasie zakupu) może wskazywać na jego większą soczystość i kruchość po obróbce termicznej – gotowaniu, natomiast brak tej wyraźnej zależności w przypadku pieczenia.