

Acceptability of lamb meat from different producing systems and ageing time to German, Spanish and British consumers

M. Font i Furnols ^{a,*}, R. San Julián ^b, L. Guerrero ^a, C. Sañudo ^c, M.M. Campo ^c,
J.L. Olleta ^c, M.A. Oliver ^a, V. Cañeque ^d, I. Álvarez ^d, M.T. Díaz ^d, W. Branscheid ^e,
M. Wicke ^f, G.R. Nute ^g, F. Montossi ^b

^a IRTA-Centre de Tecnologia de la Carn, Monells (Girona), Spain

^b Programa Ovinos y Caprinos, INIA Tacuarembó, Uruguay

^c Producción Animal y Ciencia de los Alimentos, Facultad de Veterinaria, Zaragoza, Spain

^d SGIT-INIA Madrid, Spain

^e Institut for Meat Production and Market Research, Kulmbach, Germany

^f Forschungs- und Studienzentrum für Veredlungswirtschaft der Universität Göttingen, Vechta, Germany

^g Division of Farm Animal Science, University of Bristol, Langford, United Kingdom

Received 26 April 2005; received in revised form 9 September 2005; accepted 9 September 2005

Abstract

In the present study German (DE), Spanish (ES) and British (UK) consumers' acceptance of lamb from their own country compared to lamb from Uruguay (UY) was evaluated. Two-hundred consumers in each country evaluated tenderness, flavour and overall acceptability of four types of lamb, two from UY (light and heavy lambs aged 20 d) and 2 local (with two ageing times, 7 and 20 d). In each country 1.5 cm-thick slices of lamb were evaluated by previously selected consumers in controlled conditions. DE and UK consumers showed significantly ($P < 0.05$) different acceptability scores between samples, the lamb from heavier animals and aged 20 d being the most appreciated. On the other hand the majority of the ES consumers significantly ($P < 0.05$) preferred the meat from lighter lambs. Production systems, cultural aspects and consumption habits seem to affect the acceptability of the lamb to the consumers.
© 2005 Elsevier Ltd. All rights reserved.

Keywords: Lamb; Consumers; Ageing; Production systems

1. Introduction

Europe is the biggest importer of lamb meat (Sañudo, Sánchez, & Alfonso, 1998a) accounting for almost 50% of the world market. South American countries like Uruguay are looking for new export markets for their lamb meat. These products must compete effectively with those produced locally. European consumers' opinion of products different to those produced in their own country, or those that they are used to consuming, could be of great interest to meat producers in other countries. In addition,

consumers' opinion is a good guide to the improvement of meat quality (Issanchou, 1996). Furthermore, within Europe lamb production is variable and depends on the characteristics of the production system (breed, nutrition, sex, slaughter weight and age, infrastructures, etc).

In general, Mediterranean countries produce lamb with lower carcass weights reared on milk and/or concentrate, while Central-Northern European countries produce animals with higher carcass weights reared usually on grass (Alfonso, Sañudo, Pardos, Fisher, & Sierra, 2000; San Julián et al., 2004). The intrinsic composition and the sensory properties of the lamb depend on these characteristics of the production system to varying degrees according to different studies (Arsenos et al., 2002; Carlucci, Napolitano,

* Corresponding author. Tel.: +34 972 630052; fax: +34 972 630373.
E-mail address: maria.font@irta.es (M. Font i Furnols).

Girolami, & Monteleone, 1999; Díaz et al., 2005; Duckett & Kuber, 2001; Field, Williams, & Miller, 1983; Fisher et al., 2000; Lloyd, Slyter, & Costello, 1981; Martínez-Cerezo, Sañudo, Medel, & Olleta, 2005a; Priolo, Micol, Agabriel, Prache, & Dransfield, 2002; Sañudo et al., 1997), and may in some way affect consumers' acceptance (Martínez-Cerezo, Sañudo, Panea, & Olleta, 2005b; Mendenhall & Ercanbrack, 1979).

Cultural aspects or consumption habits could also influence the acceptability of the meat to the consumers (Sink, 1979). For instance, whereas people from Oceania like lamb and mutton with a strong flavour North American consumers either dislike it or are unfamiliar with its flavour (Field et al., 1983; Jamora & Rhee, 1998; Rubino, Morand-Fehr, Renieri, Peraza, & Sarti, 1999). Within Europe there are also differences in the requirements of lamb properties (Dransfield et al., 2000). In this aspect southern European requirements are for a much lighter lamb, 8–12 kg, very lean, fat class 1 and 2, with shape being almost irrelevant. Belgium and Germany required heavier lambs (18–22 kg) (Kilkeny, 1990).

The acceptability of lamb meat has been evaluated in some consumer studies (Dransfield et al., 2000; Martínez-Cerezo et al., 2005b) although it depends on the type of lamb evaluated as well as the preparation of the samples and the kind of study carried out.

The aim of this study was to assess German, Spanish and British consumers' acceptance of lamb meat depending on the production system and ageing time, by means of the evaluation of lamb meat from Uruguay slaughtered at two different weights and from local lamb produced in the consumer's own country at two different ageing periods.

2. Materials and methods

2.1. Animals selection

Thirty light (11.1 ± 1.4 kg cold carcass weight, 3–4 months age) and 30 heavy (19.4 ± 2.2 kg cold carcass weight, 12–13 months age) Uruguayan castrated lamb carcasses from Corriedale breed were selected. The lambs were reared on a pure extensive grass system. Sixty more commercial lamb carcasses were selected in Germany (DE), Spain (ES) and United Kingdom (UK), 20 in each country. In Germany the lambs (23.2 ± 3.65 kg cold carcass weight, 4–6 months age) were males from crossbreeds between Suffolk or Schwarzköpfiges Fleischschaf $\times$ Merino Landschaf breeds. They were finished on pasture that consisted mainly of clover, supplemented with wheat, bean and pea grain. In Spain the lambs (10.2 ± 0.6 kg cold carcass weight, three months age) were males from Rasa Aragonesa breed, from the European quality label (PGI) *Ternasco de Aragón*, reared intensively and fattened on concentrate and cereal straw ad libitum. Finally, the British lambs (22.8 ± 1.7 kg cold carcass weight) were castrated males from different commercial crosses. They were reared extensively on pasture and supplemented only at specific times.

In all four countries the lambs were slaughtered in commercial abattoirs using standard procedures.

2.2. Sampling

The loins of the carcasses were kept entire at 2 °C for 48 h after slaughter. Then the loins were deboned and the *Longissimus lumborum* muscle was cut for the consumer study (from the 1st to the 6th lumbar vertebrae) as proposed by Sañudo, Olleta, Campo, Alfonso, and Panea (2000a). They were then vacuum packed in aluminium bags and kept at 2 °C until the end of the ageing time. After that they were frozen at –20 °C until the day before the consumer test.

The Uruguayan samples had an ageing time of 20 d to simulate the time the samples would take to reach the European market in refrigerated conditions. Each half carcass was evaluated in one country (DE, ES or UK), so, each Uruguayan animal was evaluated by consumers from two different countries. In order to ensure that the sampling is representative, the distribution of the loins between the countries was carried out so that the two loins of the same animal were not evaluated in the same country.

The local samples (DE, ES and UK) had two different ageing times, 7 d for the right loin, and 20 d for the left one to simulate some local and the Uruguayan ageing time, respectively.

2.3. Sample preparation

Lamb samples were thawed at 4 °C for 24 h before being used. They were cut into five slices of 1.5 cm-thickness and cooked in a contact grill pre-heated to 200 °C until the internal temperature of the muscle reached 72 °C as measured by a thermo-couple inserted into the approximate centre of the muscle. After cooking the slices of lean, excluding external fat and connective tissue, were cut into two pieces and each piece was wrapped with aluminium foil, coded and placed in a heater to stop them cooling down.

2.4. Experimental design and consumer evaluation

The consumer study was carried out in DE, ES and UK. Two hundred consumers were recruited in each country in two different locations (100 consumers in each location), except in the UK where the final number of consumers was 192. In DE the study was carried out in Kulmbach and Vechta, in ES in Monells and Madrid and in the UK in Langford and Aberystwyth. Consumers were selected according to their sex and age trying to represent the distribution of the population as closely as possible. However, in the UK the group 61–75 years old was underrepresented and the previous group (41–60 years old) overrepresented. The characteristics of the consumers selected in each country are shown in Table 1. Each consumer evaluated four meat samples, one from Uruguayan light animals

Download English Version:

<https://daneshyari.com/en/article/2452312>

Download Persian Version:

<https://daneshyari.com/article/2452312>

[Daneshyari.com](https://daneshyari.com)