Evaluation of colour in rabbit meat prepared with two cooking methods produced and slaughtered in the Ñuble region, Chile.

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Objective: Was to compare the effect of different cooking methods on the colour of rabbit meat cuts, to obtain an initial approximation of this meat in Chile.

Methodology: Meat samples, from the Longissimus dorsi muscle, randomly selected without distinction between females and males, were segmented into 6x2x2cm sizes of approximately 20 g [1], using two cooking methods then cooled to room temperature (24°C), following the methodology of Choi et al. [2]:

- Water cooking: rabbit meat pieces were cooked in water at 100°C for 22 minutes until reaching 75°C in the centre.
- Grilling: cooked on an electric grill preheated to 150°C, the pieces were cooked for 14 minutes: 3 minutes on each side and then turned every two minutes until reaching 75°C in the centre.

The colour coordinates of the CIELab L*, a* and b* space was evaluated using a Konica Minolta CR-410 colourimeter, calculating Chroma (C*), Hue (H*) and ΔE. Areas were selected free of bruising, discolouration, haemorrhage or any other condition that may impede correct assessment, three repetitions were performed in the same anatomical location for each carcass resulting in the colourimeter averaged readings [3].

Results and Discussion: The colours obtained in the colorimetric evaluation were plotted by transforming the CIElab coordinates to RGB space. The shades obtained for sample A (raw meat), method B (grilled meat) and C (meat cooked in boiled water) are com- parable with each other allowing to establish differences perceptible by consumers. The L* coordinate, which can take values be- tween 0 (black) to 100 (white), is related to the total pigment content of a food, a higher pigment content implies a higher light ab- sorption and therefore a darker food [4]. The a* axis extends from green (-a) to red (+a) and the b* axis from blue (-b) to yellow (+b) [5]. On the other hand, evaluations such as Chroma and Hue allow the position of the analysed colour in the CIElab space to be more accurately located, the angle at which a colour deviates from the X-axis can be calculated to determine the hue angle (Hue) and the distance of the sample from the centre of the space determines the saturation or intensity of the sample (Chroma) [5]. The average values obtained for L*, a*, b*, Chroma and Hue, determine that sample A (raw meat) presents opaque, slightly red, and yellow colours, with low intensity. Sample B (meat cooked on the grill) presented a higher average value of a* and b*, resulting in colours with greater reddish and yellow tones than sample An and with greater intensity, explained by the cooking treatment used which generates brown tones, while sample C (cooked in boiled water) presented a higher value of L*, with lighter colours and less intensity.

The difference between two colours can be calculated according to the measurements obtained in the CIElab space, this is called ΔE, however, given the capacity of the human eye it is not always possible to discriminate between two colours even when a dif- ference is detected using ΔE. A study determined the ability of consumers to discern between similar colours of pork meat, result- ing in 68% of respondents being able to correctly differentiate a ΔE = 3, not all consumers will be able to differentiate this value [6]. When comparing the averages of L*, a* and b* obtained in the analysis to calculate ΔE between the different samples, the ΔE values obtained are perceptible by consumers. The biggest difference found is between the raw meat and the samples that were subjected to cooking by electric grill (27.6236) whereas the raw and water-cooked samples have a lower ΔE value (19.6162).

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