AMINOACID AND SENSORY PROPERTIES OF ALPACA MEAT (*Vicugna pacos*) PROCESSED BY SOUS VIDE TECHNOLOGY

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I. INTRODUCTION

Sous-vide is applicable to almost all type of foods. In sous-vide meat is generally cooked for a long time at 55–80 °C. In relative low temperature juiciness of meat is maintained while the flavour and tenderness are improved [1]. Cooking process highly impact the properties of food which are relevant to consumer preferences such as aroma, flavour, colour, chewiness etc. cooking not only changes food properties but also make food free from pathogens. Cooking also affects the nutritional value of food either positively or negatively. Traditional cooking uses high-temperature which contributes to a loss of nutritional components, flavour and colour etc. Amines can be categorized based on the structure of the precursor amino acid (aliphatic, aromatic, and heterocyclic) and the number of amino groups (monoamines, diamines, and polyamines) [2]. The consumer believes that meat is a choice for healthier diet because of high protein, low fat and low cost [3]. Meat is certainly a nutritious food and it is worth to be explored in sous vide application to be served as a ready-to-eat product [4]. Alpacas represent an important meat resource for rural Andean families [5]. Therefore, the aim of this study was to contribute to the knowledge of the amino acid and sensory characteristics of alpaca meat (*Vicugna pacos*).

II. MATERIALS AND METHODS

The alpaca meat (Leg) was cut into cubes of 5 cm, square to then be vacuum packed, to submit to different cooking treatments by sous-vide, later the composition of Amino Acid Analysis Using Zorbax Eclipse-AAA Columns and the Agilent 1100 HPLC and sensory analysis were evaluated. The T1=Raw meat; T2=60°C/2h.; T3: 60°C/4h.; T4: 80°C/2h; T5: 80°C/4h. The values are expressed as mean \pm S.E.M. (n = 3). Means with different superscript letter are significantly different (P < 0.05).

III. RESULTS AND DISCUSSION

Table 1. The amino acid composition, of alpaca meats samples, profile among all batches are possibly due to the different sources of amino acid. In relation to the arginine profile, except for some minor exceptions, individual amino acids of the two treatments T3 and T5 showed significant difference, although they showed significantly different amounts, of 142.87 and 160.27 (mg/100 g.), respectively. These differences were mainly attributed to the differences found for Leucine, followed by glutamic acid and serine, which were quantitatively more affected by the substitution of either alpaca meat. In this respect, amino acid composition of T2 and T4 was significantly lower than other meats, with amount at the end of cook. Was clearly reflected in the final product values, with significantly higher total values for meats.

Amino acids	T1	T2	Т3	T4	T5
Arginine	65.22±5.93°	117.12±22.06 ^b	142.87±20.27 ^{ab}	141.27±4.71 ^{ab}	160.27±3.43ª
Leucine	41.22±4.20 ^{dc}	68.81±12.96 ^c	86.64±14.28 ^b	92.13±5.05 ^b	111.72±1.23ª
Valine	34.39±1.97d	50.69±9.10°	61.22±7.74 ^b	65.52±1.59 ^b	77.61±3.18ª
Isoleucine	18.98±1.30 ^d	31.37±7.32°	41.04±7.61 ^b	43.03±2.14 ^b	54.48±1.56ª
Phenylalanine	20.22±1.69d	32.96±5.91°	42.29±8.16 ^b	43.69±2.06 ^b	53.34±1.18ª
Lysine	34.45±5.45 ^d	53.58±6.17°	58.77±5.46 ^{bc}	63.54±5.89 ^{ab}	71.79±0.47ª
Threonine	15.43±1.58d	26.51±5.86°	35.77±6.56 ^b	36.94±1.52 ^b	45.46±1.62ª

Table 1. Amino acid profile (mg/100 g.) and nutritional significant ratios of different treatments.

Methionine	16.67±1.21d	25.80±3.77°	30.88±4.54°	32.15±1.17 ^{ab}	36.99±1.33ª
Histidine	29.43±2.26 ^b	37.02±2.52ª	38.03±4.19ª	37.01±0.26ª	40.02±2.07ª
Glutámic Ac.	56.57±5.34d	100.09±22.08°	144.18±28.85 ^b	152.42±9.58 ^b	193.70±4.71ª
Aspártic Ac.	20.97±2.18 ^d	38.90±9.81°	58.93±11.31 ^b	65.64±3.71 ^b	85.31±2.89ª
Serine	36.85±6.00 ^d	71.31±13.60 ^c	93.20±20.26 ^b	96.76±5.66 ^{ab}	117.14±3.09 ^a
Alanine	28.11±1.92 ^d	49.69±8.06°	62.43±10.39 ^{ab}	60.39±2.57bc	72.37±0.31ª
Glycine	58.58±4.13°	122.66±6.36ª	117.20±12.30ª	89.48±0.62 ^b	97.74±4.51 ^b
Tyrosine	18.88±2.57°	30.74 ± 6.08^{b}	40.71±8.24ª	39.23±0.79 ^{ab}	47.71±1.94ª
Cysteine	ND	ND	ND	ND	ND
Proline	9.28±8.68ª	10.19±17.65ª	ND	ND	ND

T1=Raw meat; T2= $60^{\circ}C/2h$.; T3: $60^{\circ}C/4h$.; T4: $80^{\circ}C/2h$; T5: $80^{\circ}C/4h$. The values are expressed as mean ± S.E.M. (n = 3). Means with different superscript letter are significantly different (P < 0.05).



Figure 1. Sensory evaluation of meat treatments by sous-vide.

IV. CONCLUSION

The effect of temperature and cooking time using sous vide technology showed significant effects on amino acid profile, where a temperature increases. An effect was shown in the sensory evaluation of alpaca meat through sous vide technology at long times and low temperatures where it was possible to observe that the sample 60°C/2h and 80°C/2h treatments are the best in scent and color; in texture and flavor the best treatments are 60°C/4h. Regarding the juiciness of the 80°C/4h treatment was the best and in appearance.

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