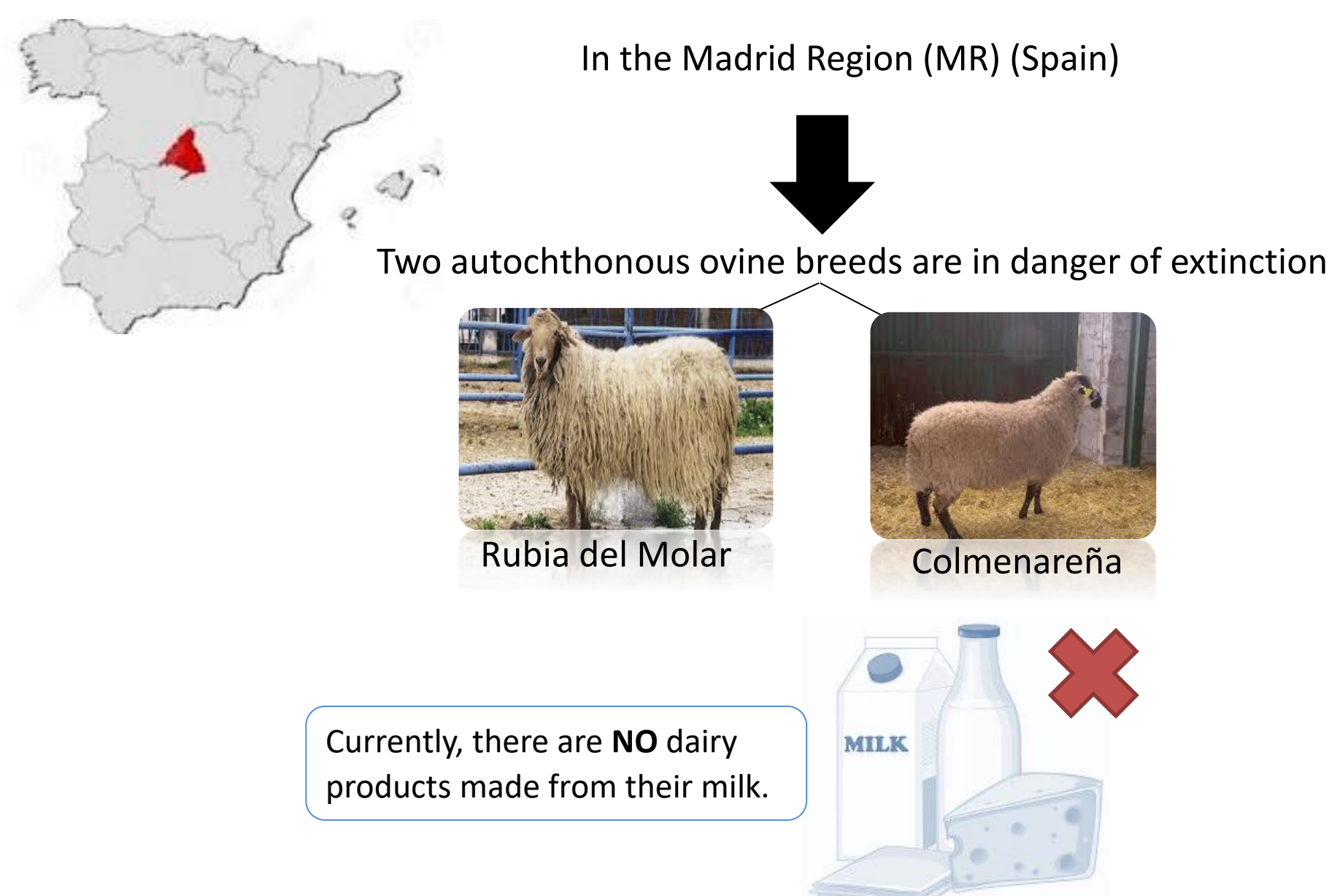


Characterization of sheep cheeses made from the milk of the Madrid autochthonous Colmenareña ovine breed



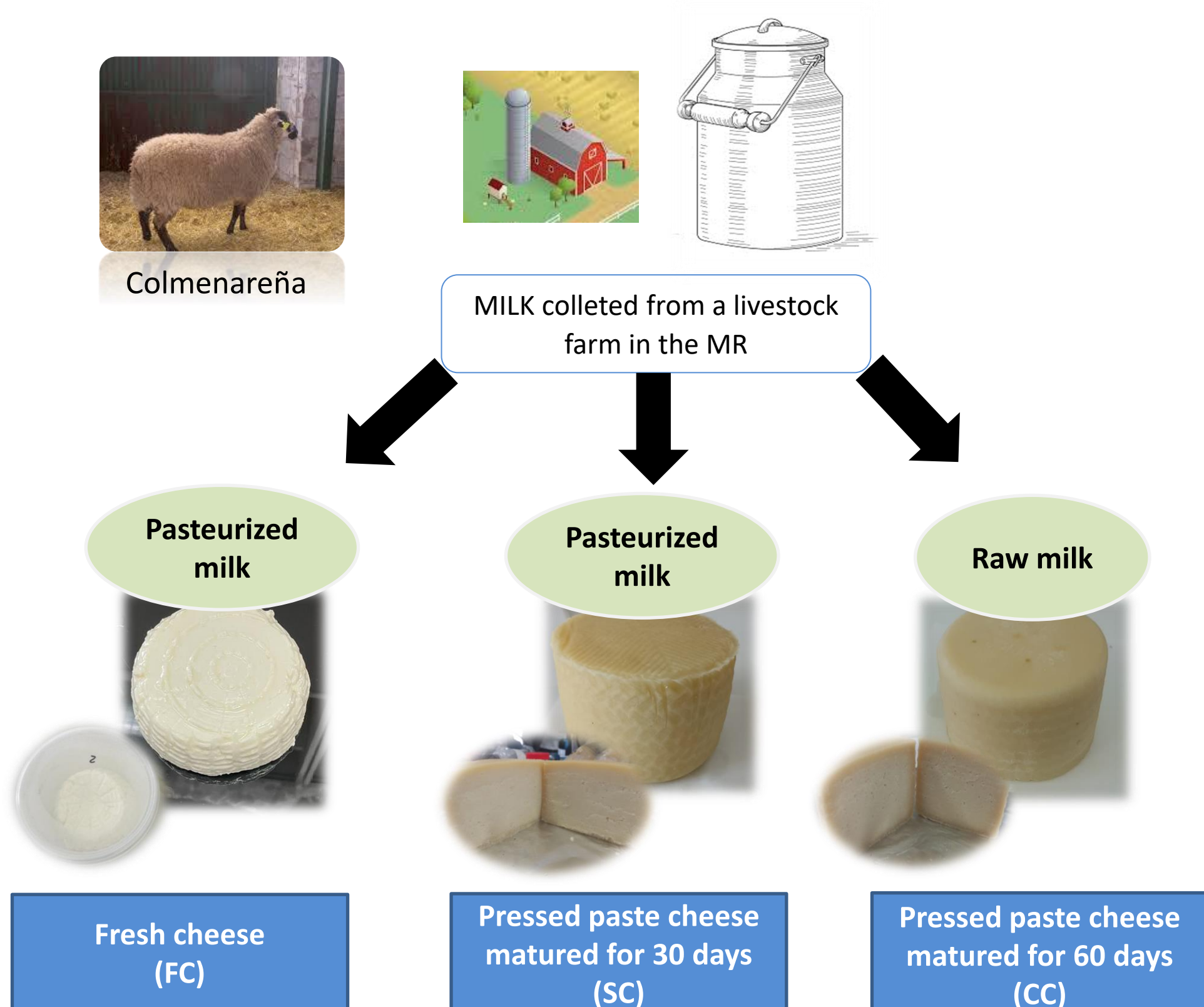
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INTRODUCTION & AIM



The aim of this study was to evaluate the characteristics of three types of cheeses elaborated with sheep milk from the Colmenareña breed to study their quality, and in this way aid in the preservation of the breed.

METHODS



Nutritional composition:

- Fat content (%)
- Protein content (%)
- Salt content (%)

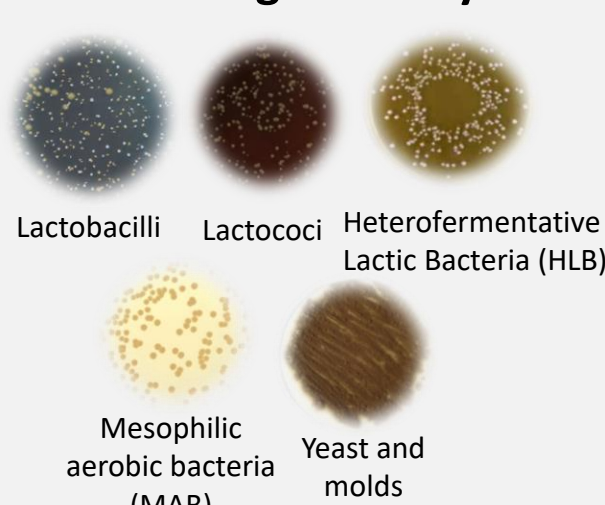


Physico-chemical analysis:

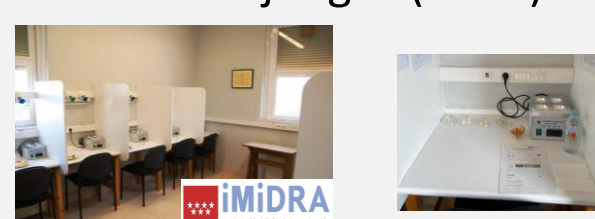
- pH
- Water activity (a_w)
- Moisture (%)
- Colour (L^* , a^* , b^*)
- Texture profile



Microbiological analysis:



Sensory analysis:
Trained judges (n=12)



Fatty acid profile



RESULTS & DISCUSSION

Table 1. Nutritional composition of three sheep cheeses made from the milk of Colmenareña autochthonous sheep breed.

	FC	SC	CC
Nutritional composition			
Fat content (%)	19.91 ± 1.93 ^a	29.96 ± 0.71 ^b	31.38 ± 1.37 ^c
Protein content (%)	15.42 ± 0.53 ^a	25.54 ± 0.68 ^b	27.02 ± 0.84 ^c
Salt content (%)	1.08 ± 0.05 ^a	2.39 ± 0.11 ^b	2.16 ± 0.34 ^b
Physico-chemical analyses			
pH	6.43 ± 0.16 ^c	5.20 ± 0.11 ^a	5.41 ± 0.06 ^b
Water activity (a_w)	0.96 ± 0.01 ^c	0.90 ± 0.00 ^a	0.91 ± 0.01 ^{ab}
Moisture (%)	64.85 ± 1.91 ^c	37.25 ± 1.48 ^b	34.48 ± 1.07 ^a
L^*	96.04 ± 1.04 ^c	81.06 ± 2.90 ^b	74.51 ± 11.35 ^a
Colour Paste a^*	-3.43 ± 0.26 ^c	-5.39 ± 0.40 ^a	-4.69 ± 0.25 ^b
b^*	11.69 ± 0.61 ^a	19.87 ± 2.67 ^b	20.40 ± 1.18 ^{bc}
Colour Rind L^*	n.d.	70.17 ± 5.67 ^b	59.34 ± 2.03 ^a
a^*	n.d.	-4.66 ± 0.37 ^a	-3.50 ± 0.70 ^b
b^*	n.d.	17.09 ± 2.16 ^a	15.65 ± 2.29 ^a

n.d.: no determined.

Figure 1. Fatty acid profile (% of total fatty acids) of sheep cheeses made from the milk of Colmenareña autochthonous sheep breed measured by HPLC-MS.

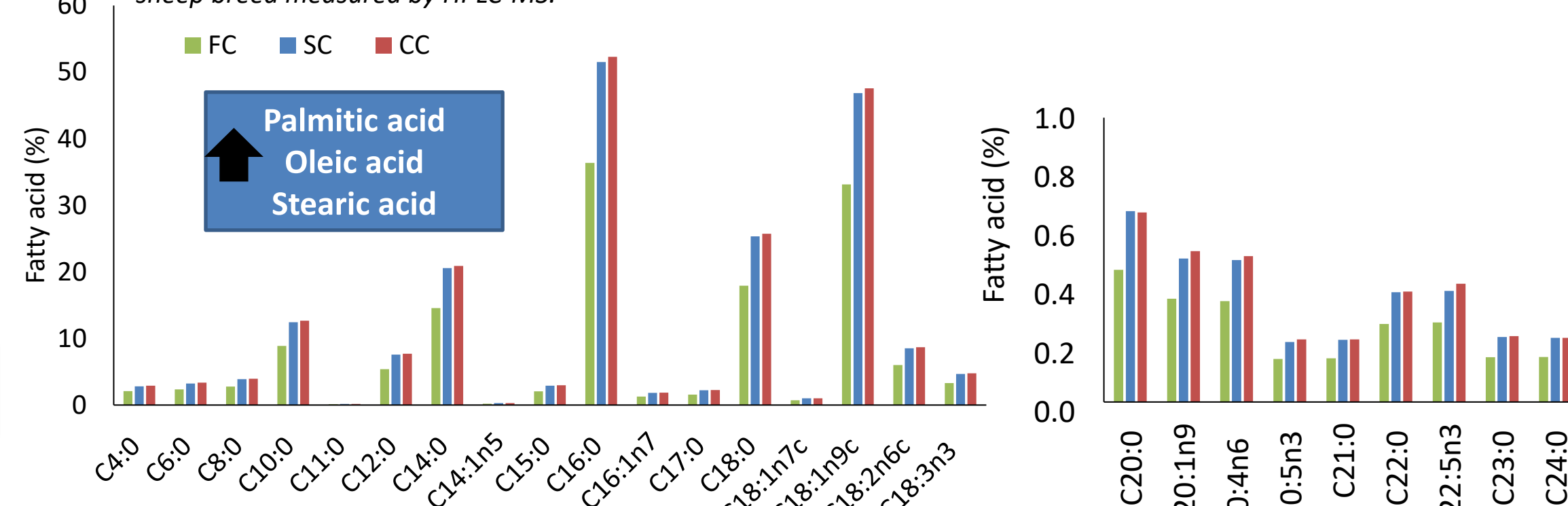


Table 2. Comparison of the texture (50% compression, TPA) of different sheep cheeses made from the milk of Colmenareña autochthonous sheep breed.

	FC	SC	CC
Hardness (N)	3.58 ± 0.85 ^a	51.32 ± 8.83 ^c	45.39 ± 8.05 ^b
Springiness	1.00 ± 0.05 ^c	0.81 ± 0.06 ^a	0.84 ± 0.06 ^b
Cohesiveness	1.00 ± 0.05 ^b	0.47 ± 0.06 ^a	0.45 ± 0.05 ^a
Adhesiveness (Ns)	-0.10 ± 0.11 ^a	-0.08 ± 0.12 ^a	-0.12 ± 0.12 ^a
Chewiness (N)	3.58 ± 0.82 ^a	19.66 ± 3.88 ^b	18.25 ± 3.45 ^b
Resilience	0.45 ± 0.03 ^b	0.32 ± 0.06 ^a	0.31 ± 0.05 ^a
Gumminess (N)	3.58 ± 0.82 ^a	23.58 ± 4.82 ^c	21.23 ± 4.03 ^b

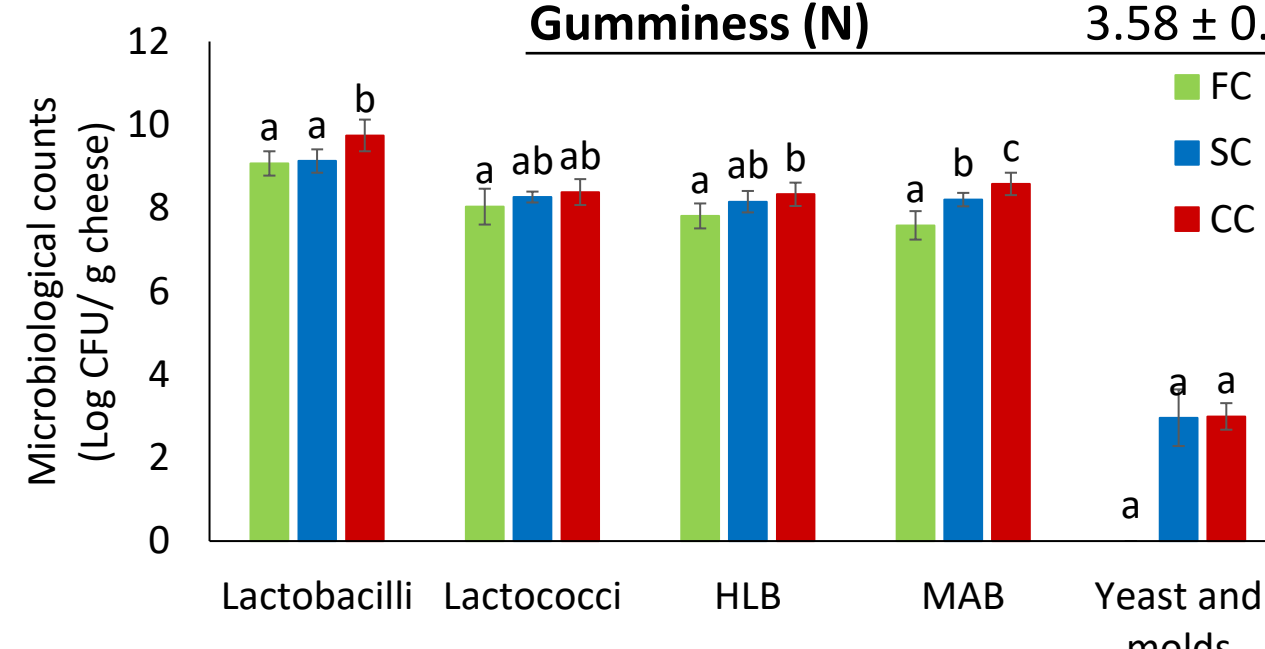
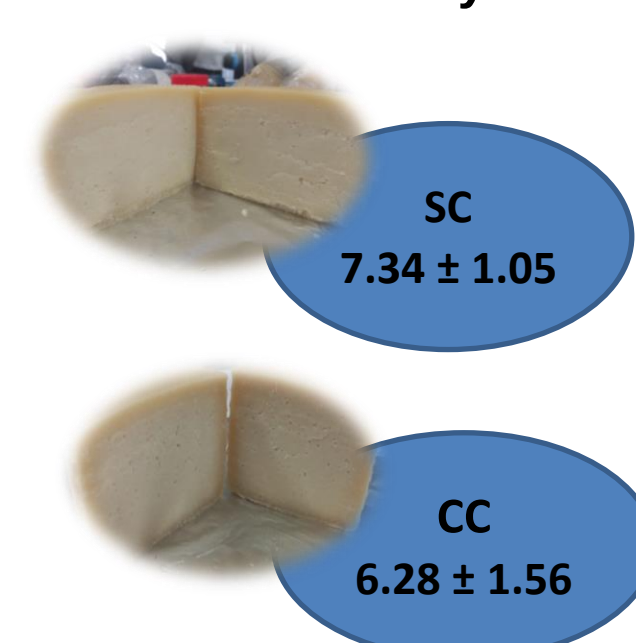


Figure 2. Microbiological counts (log CFU/g cheese) of sheep cheeses made from the milk of Colmenareña autochthonous sheep breed.

Sensorial analysis:



CONCLUSION

Colmenareña cheeses showed good physico-chemical properties. Judges considered them acceptable in their overall acceptance. The production of this type of cheese could contribute to the preservation of this native sheep breed.

FUTURE WORK / REFERENCES

A sensory analysis with consumer judges is necessary to determine their acceptance of cheeses made with milk from the Colmenareña ovine breed.

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