



Future Food Systems:
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ABSTRACT BOOK POSTERS

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Fresh goat cheese enriched with date paste: a novel ingredient for the dairy industry

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Aim: The aim of this work was to analyse the effect of date paste addition on physico-chemical and microbiological properties of fresh goat cheese.

Method: Date paste (DP) was obtained from coproducts of date fruits (Confitera cv.) at the tamar ripening stage. Fresh goat cheese was prepared with pasteurized goat milk (72 °C for 15 s). Three vats (20 L milk each one) of cheese including the control vat and 2 vats enriched with DP (4 and 8%) were processed. After the addition of 0.05 Danisco culture units (DCU)/L of the starter culture (CHOOZIT MA4001; Danisco, Sassenage, France), date paste was added to milk and stirred for 10 min followed by the addition of 1 mL/ L of rennet (calf rennet, Laboratorios Arroyo, Cantabria, Spain,). Fifteen pieces of cheese (~0.25 kg) were obtained from each batch and stored in a chamber until use at 5 °C and 85% relative humidity. Physicochemical parameters (pH, Aw, color CIELAB* and texture (TPA) and microbiological quality (*Lactobacillus spp* & *Streptococcus spp*, enterobacteria, molds and yeast, and total aerobic bacteria) were assessed in triplicate.

Results: The addition of DP didn't impair either the cheese-making process or coagulation. Regarding the physicochemical properties, significant differences were observed in the pH (control: 5.73 ± 0.04 ; 4%: 5.43 ± 0.02 ; 8%: 5.57 ± 0.03) but the aw remained similar ($p > 0.05$) among the three batches. However, significant differences were observed in the coordinates L*, a* and hue (h). With regards to the textural parameters of the cheeses, significant differences ($p < 0.05$) were observed in hardness, adhesiveness, springiness, gumminess and chewiness, while no significant differences were noticed in cohesiveness and resilience. For the microbiological quality, enterobacteria were not detected in any sample while very low counts were observed for molds and yeast in the cheeses containing the DP. Total aerobic bacteria decreased whilst lactic acid bacteria significantly ($p < 0.05$) increased when DP was incorporated.

Conclusion: The use of date coproducts for the enrichment of fresh cheese is technologically feasible without adversely affecting the coagulation process. The addition of date paste in fresh goat cheese enables to obtain products with physicochemical properties and viable microorganisms counts similar to those of plain fresh cheese.

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Fresh goat cheese enriched with date paste: a novel ingredient for the dairy industry

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INTRODUCTION

The largest palm grove in Europe is located in Elche (Alicante, Spain), declared a World Heritage Site by UNESCO. Date palm trees are cultivated in arid or semi-arid regions. In Elche, there is an autochthonous cultivar (Confitera) whose dates are commercialized as fresh dates generating a large amount of co-products. These co-products are rich in antioxidant compounds, sugars and dietary fiber, among others offering the possibility to be valorised obtaining high-added value products such as date paste.



Figure 1. Fresh date fruits (Confitera Cv.)



Figure 2. Date paste from dates of Elche palm grove (Confitera Cv.)



Figure 3. Ilicitan palm grove

OBJECTIVE

The aim of this work was to analyse the effect of date paste addition on physico-chemical and microbiological properties of fresh goat cheese.

RESULTS AND DISCUSSION

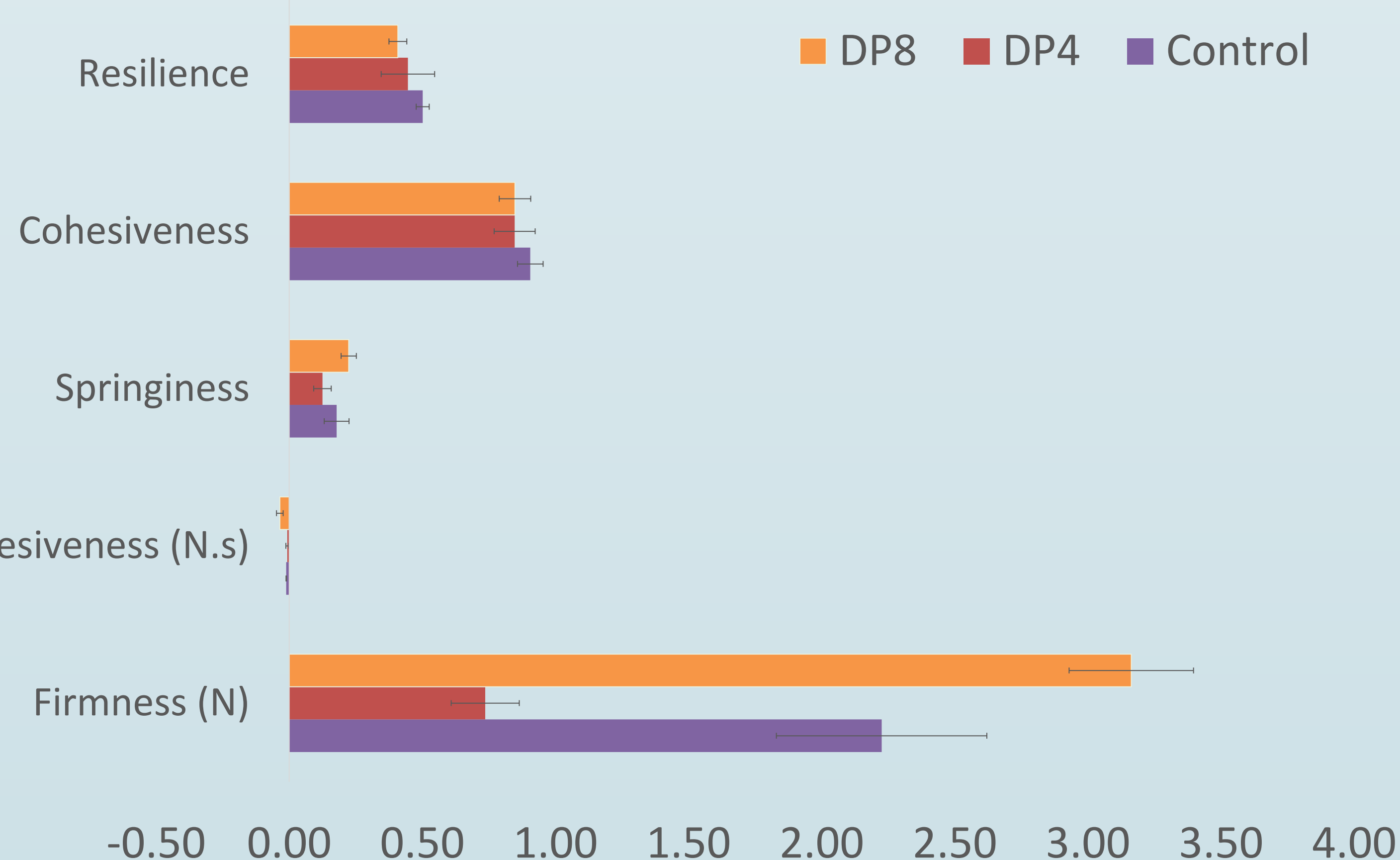


Figure 4. Textural properties of cheese with date paste (control: 0% date paste, DP4: 4% date paste, DP8: 8% date paste) (mean±standard deviation)

Table 1. Physicochemical characterization of cheese with date paste control: 0% date paste, DP4: 4% date paste, DP8: 8% date paste) (mean±standard deviation)

	pH	Aw	L*	a*	b*	C*	h*
Control	5.73±0.04 ^a	0.962±0.000 ^a	82.72±0.72 ^a	-1.50±0.05 ^b	6.63±0.18 ^a	6.80±0.18 ^a	102.78±0.58 ^a
DP4	5.43±0.02 ^c	0.961±0.006 ^a	79.90±3.06 ^{ab}	-0.57±0.70 ^{ab}	7.64±1.31 ^a	7.69±1.29 ^a	94.91±5.05 ^{ab}
DP8	5.57±0.03 ^b	0.963±0.002 ^a	78.02±3.73 ^b	0.02±1.00 ^a	8.82±3.16 ^a	8.85±3.20 ^a	90.90±4.99 ^b
p-value	0.000	0.880	0.035	0.007	0.194	0.236	0.001

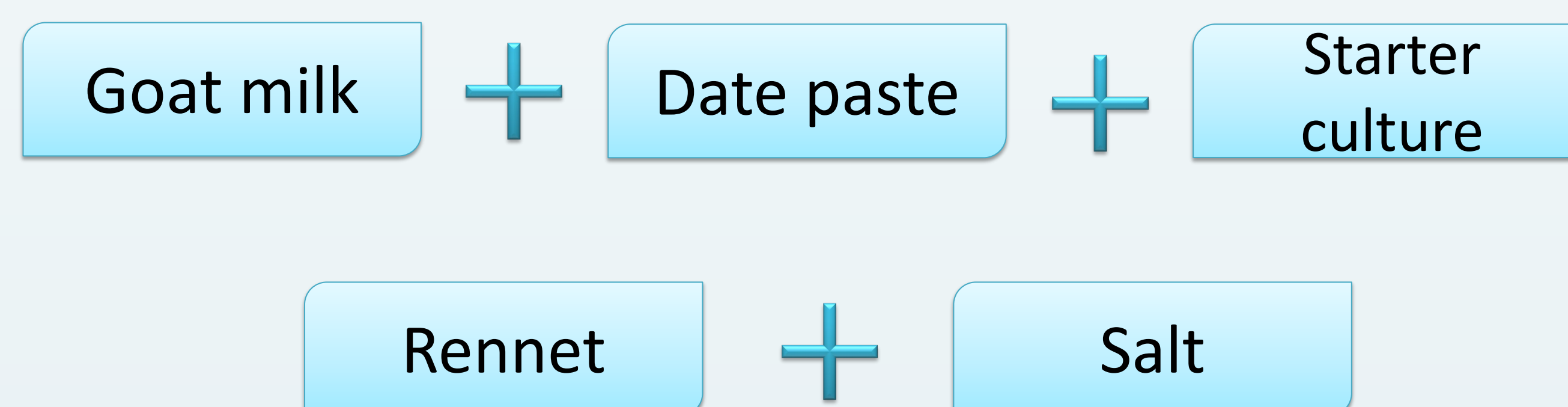
^{a-c}Different letters within rows means significant differences (p<0.05)

CONCLUSIONS

The use of date coproducts for the enrichment of fresh cheese is technologically feasible without adversely affecting the coagulation process. The addition of date paste in fresh goat cheese result in a product with similar physicochemical properties and viable microorganisms counts to a traditional fresh cheese.

MATERIALS & METHODS

MATERIALS



Cheese making



METHODS

Physicochemical characterization

Textural properties (TPA)

Microbiological analysis

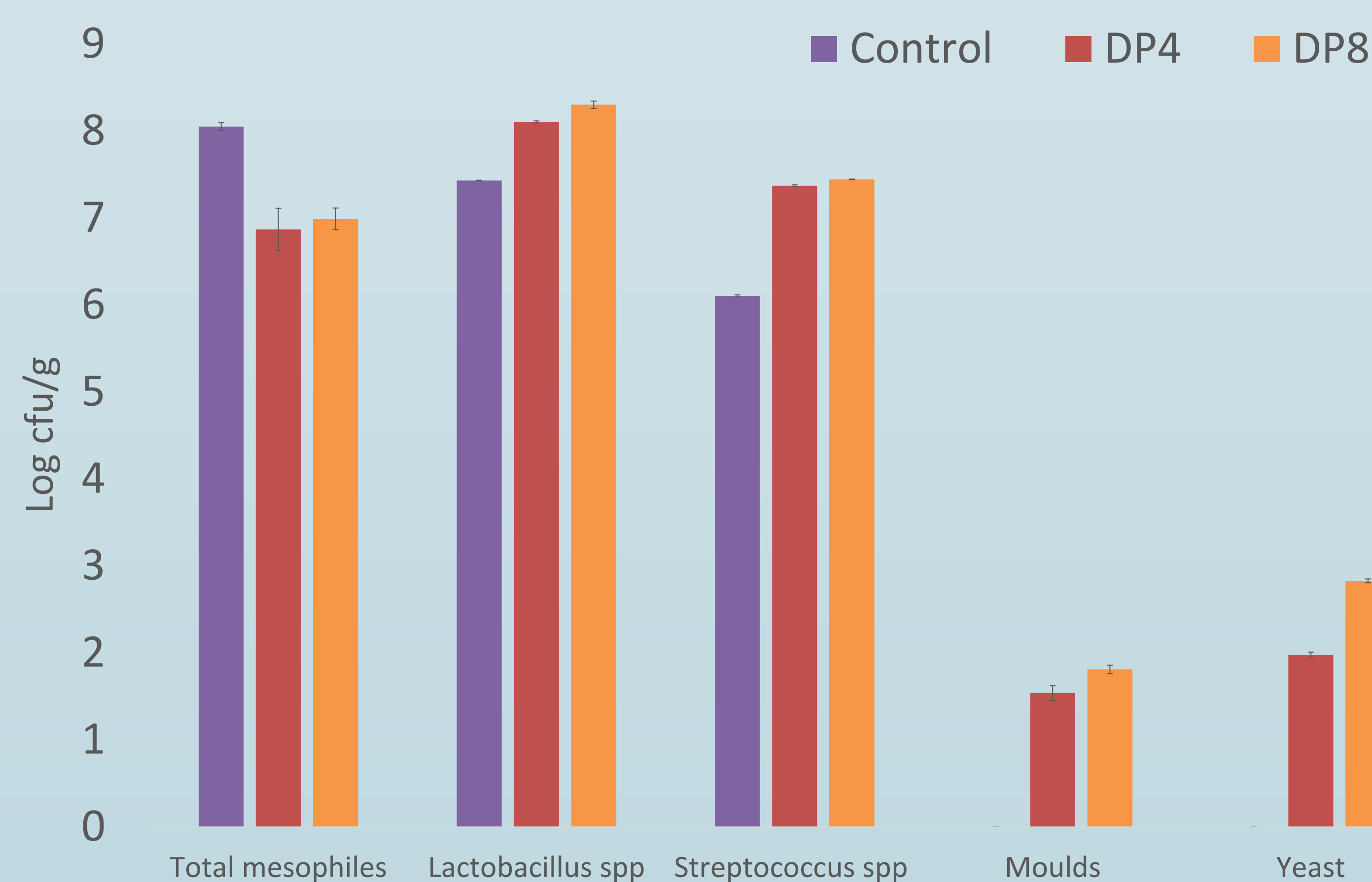


Figure 5. Microbiological characterization of cheese with date paste (control: 0% date paste, DP4: 4% date paste, DP8: 8% date paste) (mean±standard deviation)

ACKNOWLEDGEMENTS

Development and innovation of functional dairy products using bioactive compounds from the valorization of agri-food co-products.
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