Clean label antimicrobial strategies for fungal spoilage of pastry fillings

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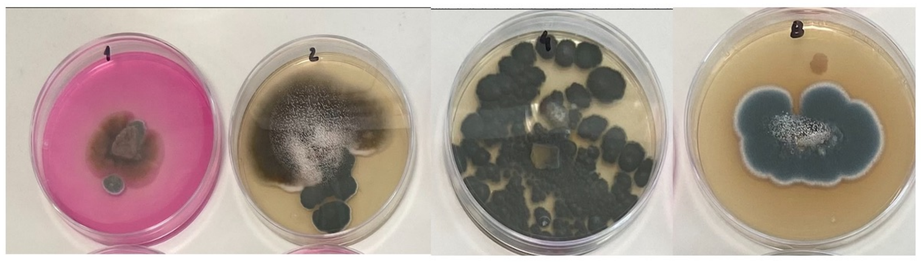
Introduction

Fungal spoilage is a key concern for the food industry, leading to hefty economic losses Consequently, the food waste that follows is also a grave matter not only due to its social or humanitarian aspect but also its environmental impact[1,2].

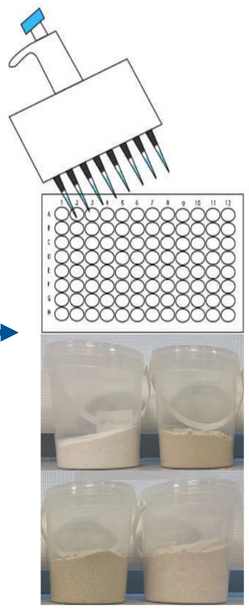
Objectives

The aim of this study was to assess the antifungal activity of commercial clean label alternatives to potassium sorbate against moulds isolated from a pastry filling.

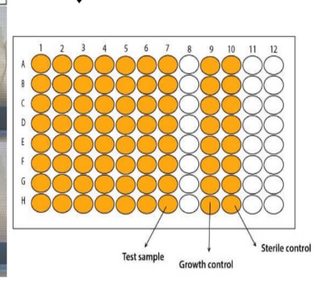
Methodology



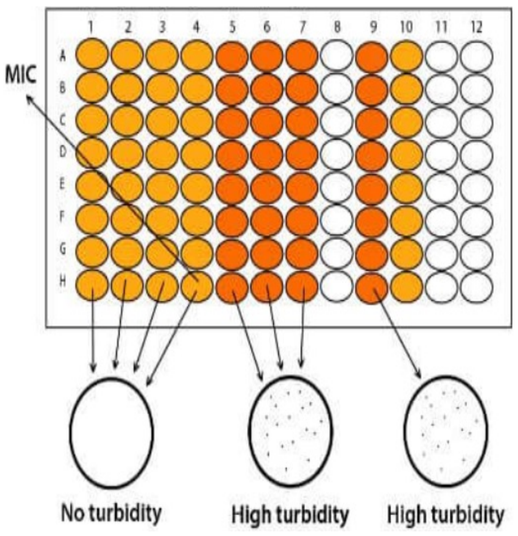
- Isolation of fungi from a contaminated product used in antimicrobial activity tests of clean label preservatives



- 6 moulds isolated
- 5 antimicrobial compounds
- 5 concentrations tested for each



Incubation at 25 °C for 3 days



Results and discussion

- Fungal growth was not completely inhibited at the concentrations recommended by the manufacturers
- The antimicrobial agents are still effective and, therefore, a promising alternative to traditional chemical preservatives for the pastry industry

	MIC					
Antimicrobial compound	Mould A	Mould B	Mould C	Mould D	Mould E	Mould F
Citrus extract	1.55%	1.55%	3.00%	1.55%	1.55%	3.00%
Berry extract	1.00%	1.0%	1.00%	>1.00%	1.00%	1.00%
Natural extract	<0.05%	0.10%	>0.60%	>0.60%	0.30%	>0.60%
Vegetable extract	1.55%	1.55%	6.00%	3.00%	3.00%	3.00%
Fermented corn extract	1.55%	1.55%	3.00%	3.00%	6.00%	6.00%

*concentrations were chosen based on each antimicrobial compound product-specific information given by the manufacturer

Conclusions

- In this context, the clean label movement is trending to offer natural spoilage control strategies while having their organoleptic characteristics and, most importantly, safety in sight
- Future research into the application of these antimicrobial compounds in pastry fillings is an important step to guarantee their efficacy and application in the industry

References

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2. Snyder, A. B., & Worobo, R. W. (2018). Fungal Spoilage in Food Processing. Journal of food protection, 81(6), 1035–1040. https://doi.org/10.4315/0362-028X.JFP-18-031

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