

Antifungal capacity of commercial flavouring agents against spoilage yeasts

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INTRODUCTION

Yeasts are involved in the **spoilage** of foods and beverages, causing **undesirable changes** in the physicochemical and sensory properties of the products.

Prevention of food spoilage requires **good manufacturing** and **hygiene practices**, but **additives** are also frequently used to hinder yeast growth.

Nowadays, consumers and companies are moving from **chemical additives** towards other **options** that can be perceived as **more natural** and **less harmful to human health**: **biopreservatives**.

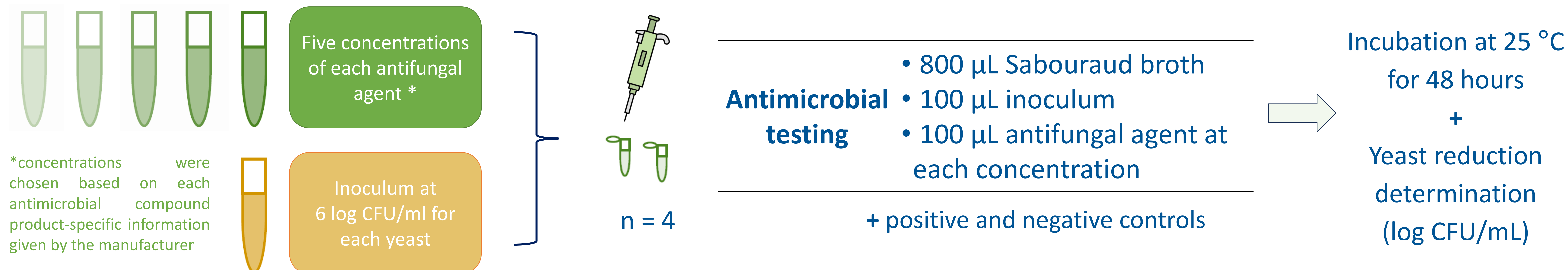
OBJECTIVES



Assess the antifungal capacity of three commercial flavouring agents against:

- four *Zygosaccharomyces* yeasts isolated from pastry fillings (*Z. bailii*, *Z. parabailii*, *Z. bisporus* and *Z. rouxii*)
- two yeasts isolated from thermo-sealed packaging (*Rhodotorula mucilaginosa* and an unidentified yeast)

METHODOLOGY



RESULTS

Mean reduction log CFU/mL ± std deviation	Blend of unspecified natural extracts (%)					Blend of oregano, rosemary and other natural extracts (%)					Orange, rosemary and other natural extracts (%)				
	0.05	0.1	0.2	0.3	0.6	0.375	0.75	1.125	1.5	3	0.05	0.1	1.55	3	6
Und. Yeast	-	-	1.7 ± 0.4	4.9 ± 1.7	5.8 ± 0.0	-	-	0.1 ± 0.0	0.2 ± 0.1	0.4 ± 0.1	-	-	0.3 ± 0.0	5.4 ± 0.2	5.4 ± 0.2
<i>R. mucilaginosa</i>	-	-	-	-	-	2.2 ± 0.2	4.5 ± 2.3	6.1 ± 0.0	4.5 ± 2.3	4.5 ± 2.3	-	-	-	0.7 ± 0.0	1.5 ± 0.7
<i>Z. bailii</i>	-	-	-	-	-	0.3 ± 0.1	0.8 ± 0.2	0.9 ± 0.1	0.8 ± 0.1	0.1 ± 0.1	-	-	-	-	-
<i>Z. parabailii</i>	-	-	0.4 ± 0.1	0.6 ± 0.1	0.6 ± 0.1	2.6 ± 0.1	2.8 ± 0.1	1.9 ± 1.3	3.0 ± 0.1	3.0 ± 0.1	-	-	-	-	-
<i>Z. bisporus</i>	-	-	-	-	-	-	0.3 ± 0.2	0.3 ± 0.0	0.4 ± 0.0	-	-	-	-	-	-
<i>Z. rouxii</i>	-	-	-	-	-	0.4 ± 0.1	0.8 ± 0.1	0.9 ± 0.0	0.8 ± 0.0	0.9 ± 0.1	-	-	-	-	-

• **Unidentified yeast** was **susceptible** to all antifungal agents, depending on the concentration.

• *Z. bisporus* was the **least affected** by commercial flavourings.

• The blend of **oregano, rosemary and other natural extracts** appears as the **most effective antifungal agent**.

- Yeast growth was **not totally inhibited** at the concentrations recommended by the manufacturers, with exceptions.
- However, the results are still **promising**, and **further research** must be conducted, particularly, by applying the natural additives to **food matrices**.

CONCLUSIONS



While the commercial extracts did not exhibit antifungal activity against all the tested yeasts, the results are still encouraging in several cases.

These **natural alternatives** may be useful to replace the **chemical preservatives** currently used in the pastry industry (such as potassium sorbate), as they may hamper yeast growth during the manufacturing process.

ACKNOWLEDGEMENTS

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