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Aunbjerg, Stina Dissing; Honoré, Anders Hans; Ebrahimi, Parvaneh; Vogensen, Finn Kvist; Skov, Thomas; Knøchel, Susanne

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Fungal bacterial interactions

ROLE OF VOLATILES IN ANTIFUNGAL ACTIVITY OF A LACTOBACILLUS PARACASEI AGAINST PENICILLIUM STRAINS

S. Aunbjerg¹, A. Honoré², P. Ebrahimi¹, F. Vogensen¹, T. Skov¹, S. Knøchel¹

¹Department of Food Science, University of Copenhagen, Copenhagen, Denmark

²Nutrition Biosciences ApS, DuPont, Brabrand, Denmark

Background

Fungi constitute a major spoilage problem in many foods including dairy products. The use of specific lactic acid bacteria (LAB) with antifungal properties has shown potential for delaying fungal spoilage without compromising sensory acceptability of the products. Much effort has been put into isolating and identifying antifungal metabolites from active fractions of cell free ferments of these bacteria. However, the methods used have been suboptimal for detection of volatiles.

Objectives

To study the antifungal role of volatiles.

Methods

Inhibitory effect of a *Lactobacillus paracasei* and metabolites was studied in a newly developed chemically defined medium and yogurt against two spoilage-associated *Penicillium* strains using a gentle sample treatment.

Conclusions

Diacetyl was identified as the major volatile produced. Antifungal activity was observed in both solid and liquid media as well as in yogurt. If cells were removed from the ferment both diacetyl content and antifungal activity was drastically reduced. If formation of diacetyl was inhibited by enzymatic conversion of the pre-cursor antifungal activity decreased markedly underlining the importance of volatile compounds in the inhibitory activity.