Effect of Monoacylglycerols on the Growth of Selected Moulds

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Introduction

The effect of 1-monocaproylglycerol (MAG C8:0), 1-monokaprinoylglycerol (MAG C10:0), 1-monolauroylglycerol (MAG C12:0), 1-monopalmitoylglycerol (MAG C16:0) and their mixtures on pure filamentous fungi *Aspergillus niger, Penicillium roqueforti, Alternaria, Phoma* sp*., Trichoderma, Penicillium nalgiovense* a *Mucor* was monitored. Furthermore, moulds obtained from bread, which was kept in a polyethylene bag under common storage conditions (*Penicillium chrysogenum*), and from durable vacuum packed military bread (*Penicillium piceum, Penicillium sp.* a *Monascus ruber*) were tested.

Methods

Pure mould cultures were cultivated on Czapek Dox Agar (CDA) modified by 10% (w/w) potato starch. Similarly modified Fungal Agar (FA) was used for the cultivation of moulds isolated from bread. MAGs were added to culture medium before sterilization in the concentration range of 0 – 2% (w/w).

Results

As it was expected, MAG efficiency depended on the type of tested mould. Growth of moulds from *Penicillium* class was strongly inhibited by MAG C8:0 and MAG C10:0 already at the concentrations of 1% (w/w) regardless of strain. On the contrary, *Aspergillus niger* and *Trichoderma* were practically tolerant against MAG action except MAG C10:0. All of tested MAGs proved to be highly effective against the growth of *Phoma sp., Mucor* and *Alternaria* at concentrations of app. 1% (w/w). Unlike the MAG action on yeasts, MAG mixtures did not markedly exhibited a synergic effect on the growth inhibition of tested moulds. Activity of MAG C8:0 and C10:0 was also monitored in a standardly prepared loaf of bread. Bread was spread with 1% water solution of MAG after baking and subsequently the above mentioned moulds were inoculated on its surface. After 14-days storage in PE bags the visual evaluation was carried out.

Conclusion

Practically in all cases both tested types of monoacylglycerols proved to have a minimal inhibition concentration effect on the mould growth.

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