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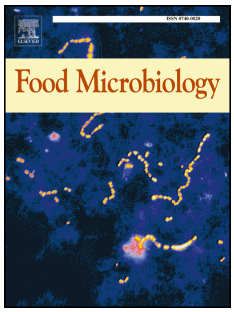

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Davide Sardella, Ruben Gatt, Vasilis P. Valdramidis

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Modelling the growth of pear postharvest fungal isolates at different temperatures

Davide Sardella[1,2], Ruben Gatt[3], Vasilis P. Valdramidis[1,2 *] ✉

[1]Department of Food Sciences and Nutrition, Faculty of Health Sciences, University of Malta, Malta

[2]Centre for Molecular Medicine and Biobanking, University of Malta, Malta

[3]Metamaterials Unit, Faculty of Science, University of Malta, Malta

* vasilis.valdramidis@um.edu.mt;

✉ Faculty of Health Science, Level 1, Block A, Room 71, Triq Dun Karm, L-Imsida, Malta.

Abstract

The effect of temperature on the mycelium growth kinetics of four postharvest fungal isolates (i.e., *Penicillium expansum*, *Alternaria alternata*, *Botrytis cinerea* and *Rhizopus stolonifer*) was assessed. A cardinal model with inflection (CMI) was used to describe the effect of the temperature on the growth rate (μ) and the lag time (λ) of each isolate. Cardinal temperature values such as T_{min}, T_{max} and T_{opt} were estimated and isolates were sorted according to their growth rate and lag time duration. Additionally, model validation was performed on a medium prepared from mashed pear pulp and on artificially wound-inoculated pear fruits. *P. expansum* was shown to be the most psychotrophic fungus with the lowest estimated T_{min}= -8.78. Model validation on pear pulp agar showed growth rate over-prediction in the case of *R. stolonifer* and *B. cinerea* but a good correlation in the case of *P. expansum* and *A. alternata*. *In vivo* experiments on pear fruits showed discrepancies from the synthetic and the simulated counterparts for all the fungi with the only exception of *P. expansum*.

Keywords: Postharvest, CMI, pears, nutrients, predictive mycology.