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József Baranyi, Nathália Buss da Silva

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The use of predictive models to optimize risk of decisions

József Baranyi[a]* and Nathália Buss da Silva[b]

[a]Gut Health and Food Safety, Institute of Food Research,

Norwich Research Park, Colney Ln, Norwich NR4 7UA, United Kingdom

[b]Department of Chemical and Food Engineering, Federal University of Santa Catarina,

Florianópolis, SC, Brazil

*Corresponding Author.

Abstract

The purpose of this paper is to set up a mathematical framework that risk assessors and regulators could use to quantify the "riskiness" of a particular recommendation (choice / decision). The mathematical theory introduced here can be used for decision support systems. We point out that efficient use of predictive models in decision making for food microbiology needs to consider three major points: (1) the uncertainty and variability of the used information based on which the decision is to be made; (2) the validity of the predictive models aiding the assessor; and (3) the cost generated by the difference between the *a-priory* choice and the *a-posteriori* outcome.

Keywords: predictive microbiology, mathematical modelling, decision analysis, risk assessment

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