Predictive Modeling and Databases for Microbial Control in Foods

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Summary
Predictive microbiology is a well-established and well-recognized scientific discipline with a burgeoning body of literature. The quantitative evaluation of microbial responses in food environments allows us to define appropriate processing conditions and formulations for processed foods. ComBase is a large database of microbial responses to food environments which has attracted the attention of many researchers and others working in the food processing industry. Although ComBase contains a vast amount of data, it is not always easy to obtain desired information from the retrieved files. In the present study, we therefore developed a new ComBase-derived database (Microbial Responses Viewer, MRV) consisting of microbial growth/no growth data. The MRV provides information concerning growth/no growth boundary conditions and the specific growth rates of queried microorganisms. The revised MRV allows retrieval of bacterial growth inhibition effects of food additives such as lactic acid, nitrite, acetic acid and sorbic acid. The MRV enables users to determine the influence of food additives on bacterial growth intuitively. Using the MRV, appropriate food design and processing conditions can be readily identified.