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Food Risk Intelligence, Science Advice & Risk Assessment Modelling At CFIA's Science Branch

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Abstract

The FIRE compares the health risks of chemical, microbial, and allergen hazards using a common risk framework. FIRE is a quantitative, comparative risk assessment model that uses trade volume, hazard prevalence, consumption data, processing information and, hazard characteristics (dose-response, growth/inactivation, health burden) to estimate risk at the product-hazard-country of origin level. FIRE applies a hybrid risk modelling approach using both predictive and calibration-based approaches, linking risk per serving estimates to the burden of food-related microbial illness in Canada. We have also developed methodology to link domestic and international outbreak data to the estimates. In addition, FIRE compares the risks from imported foods and domestically produced foods. The model generates preliminary estimates of the proportions of microbial food-borne illnesses in Canada that can be associated to imported and, domestic foods. Estimates include >2,900 food-country pairs, and 13 microbial hazards. FIRE estimates total disability-adjusted life years (DALYs) at both the population level (reflecting current consumer preferences), and, on a per serving basis (reflecting inherent risk; foods consumed infrequently or in smaller amounts e.g., spices). The use of both of these risk metrics provides a holistic view, which further informs food safety decisions by risk managers.

Keywords: *Risk Intelligence, Risk Assessment, Modelling*