Post-doctoral researcher, one (1) position in predictive modelling and inactivation (Microbiology)

Project description:

UVC irradiation has been successfully used to inactivate pathogens such as *E. coli* O157:H7 and *Salmonella* spp. and enhance safety of high-acid beverages. However, their efficacy to inactivate spoilage organisms and extend shelf-life of UVC treated beverages have been poor. This is primarily because appropriate UVC wavelengths and doses required to inactivate relevant spoilage organisms have not been determined. This lack of information contributes to the design of UV treatment systems with inadequate UV output resulting in beverages being treated with insufficient UV doses to inactivate spoilage organisms and reduced shelf-life. The proposed study is expected to solve this issue.

Objectives:

1. Determine appropriate wavelengths (254 vs 275 nm) for effective inactivation of microorganisms involved in the spoilage of high-acid beverages
2. Model the UV-C inactivation kinetics of microorganisms involved in the spoilage of high-acid beverages
3. Determine UV-C fluences (doses) required for incremental inactivation of microorganisms involved in the spoilage of high-acid beverages

The post-doctoral researcher will use advanced statistical methods to create the predictive models and to identify the key features of the models.

Requirements:

A PhD in microbiology or biochemistry with experience in studying growth and inactivation of microorganisms. Candidates should have experience in large-scale data/statistical analysis and predictive modelling.

Duties and responsibilities:

Under the guidance of Drs. S. Balamurugan and Cezar Khursigara, the post-doc will be responsible for designing and conducting laboratory experiments, statistical analysis, data management and interpretation, as well as manuscript preparation. The student will work in close collaboration with other students, technicians, and post-docs on the project.

Appointment and salary:

The position is initially for 1 year, renewable for up to 3 years with a salary of approx. . Expected start state is ASAP.

Additional information:

The post-doc will work at the Guelph Research and Development Centre laboratories of Agriculture and Agri-Food Canada and therefore would have to pass a security clearance. Preference will be given to Canadian citizens and permanent residents.

For additional information, please contact either Dr. S. Balamurugan (balamurugans@agr.gc.ca) or Dr. Cezar Khursigara (ckhursig@uoguelph.ca).