

CONTINUOUS ON-LINE LEACHING BIO-ACCESSIBILITY STUDIES OF BLACK SOLDIER FLY LARVAE USING INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY. **Qiqi Zhang**¹, Zoltan Mester², Diane Beauchemin¹, ¹Queen's University, Department of Chemistry, Kingston, ON K7L 3N6, Canada; ²National Research Council of Canada, Metrology Research Centre, 1200 Montreal Rd, Ottawa, ON K1A 0R6, Canada. (17qz@queensu.ca)

Black soldier fly larvae, as the most sustainable alternative protein sources among all edible insects, have been studied extensively for use as waste management and animal feed. As little is known about their use as human food, the previously established continuous on-line leaching method (COLM) coupled with inductively coupled plasma mass spectrometry (ICPMS) has been applied to measure their bio-accessible metal(loid)s concentrations of As, Cr, Se, Cd, Pb, and Ni. However, the usage of stainless-steel column has been found to induce clogging and leaching of column contained elements. Here we showed that replacing the metal column with a polypropylene flash column generates better results. This transparent column enables visualization of the digestion processes and reduces column background and back pressure. The modified COLM ensures quick risk assessment and isotopic source identification. Following the Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA), BSFL are safe to consume for all ages (except for infants) if people keep their regular daily protein intake and consume BSFL 2 days per week, except for the carcinogenic risk of arsenic. Speciation analysis of the bio-accessible As fraction is necessary to ensure the safe human consumption of BSFL.