THESIS ABSTRACT

Nitrogen-Bearing Toxins & The Environment
Food-Safety Monitoring Systems for the Quality Assurance of
Vegetable Protein Products

by

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The multitude of food recalls in 2007 clearly demonstrated that total nitrogen-content (ΣN) determination by means of Near Infrared Spectroscopy (NIRS) can be deceived, and should no longer be regarded as a complete quality assurance program for nutritive-protein evaluations. Furthermore, contemporary Canadian-employed analytical tools are precariously limited in their ability to effectively assure a product where there is no *a priori* knowledge of the environmental toxin(s) involved. In light of these challenges, this study explored a number of new analytical techniques used to assess and furthermore assure the quality of Vegetable Protein Products (VPPs). Using LC/MS/MS/MS technologies, a combination of VPP-based samples were analyzed for the presence of nitrogen-bearing environmental toxins. Of the 117 test-runs, involving an assortment of matrices, Melamine (MEL) and Cyanuric Acid (CYA) were positively identified (> 1 PPM) in 22 and 17, respectively. Subsequent HPLC-UV Amino-Acid-Profiling further confirmed the adulteration of those materials contaminated with Melamine-and-Related-Compounds (MARC).

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