

Determination of a Novel Artificial Sweetener Advantame in Food by Liquid Chromatography Tandem Mass Spectrometry

Authors : Fangyan Li, Lin Min Lee, Hui Zhu Peh, Shoet Harn Chan

Abstract : Advantame, a derivative of aspartame, is the latest addition to a family of low caloric and high potent dipeptide sweeteners which include aspartame, neotame and alitame. The use of advantame as a high-intensity sweetener in food was first accepted by Food Standards Australia New Zealand in 2011 and subsequently by US and EU food authorities in 2014, with the results from toxicity and exposure studies showing advantame poses no safety concern to the public at regulated levels. To our knowledge, currently there is barely any detailed information on the analytical method of advantame in food matrix, except for one report published in Japanese, stating a high performance liquid chromatography (HPLC) and liquid chromatography/mass spectrometry (LC-MS) method with a detection limit at ppm level. However, the use of acid in sample preparation and instrumental analysis in the report raised doubt over the reliability of the method, as there is indication that stability of advantame is compromised under acidic conditions. Besides, the method may not be suitable for analyzing food matrices containing advantame at low ppm or sub-ppm level. In this presentation, a simple, specific and sensitive method for the determination of advantame in food is described. The method involved extraction with water and clean-up via solid phase extraction (SPE) followed by detection using liquid chromatography tandem mass spectrometry (LC-MS/MS) in negative electrospray ionization mode. No acid was used in the entire procedure. Single laboratory validation of the method was performed in terms of linearity, precision and accuracy. A low detection limit at ppb level was achieved. Satisfactory recoveries were obtained using spiked samples at three different concentration levels. This validated method could be used in the routine inspection of the advantame level in food.

Keywords : advantame, food, LC-MS/MS, sweetener

Conference Title : ICNFS 2015 : International Conference on Nutrition and Food Sciences

Conference Location : Zurich, Switzerland

Conference Dates : July 29-30, 2015