International Journal of Biotechnology and Biomedical Sciences
p-ISSN 2454-4582, e-ISSN 2454-7808, Volume 5, Issue 1; January-June, 2019 pp. 84-84

http://www.krishisanskriti.org

Simultaneous Screening and Quantification Solution for Pesticides Residues in Potato by using Unique GC-Orbitrapin Full Scan Mode

Sarvendra Pratap Singh, Rana Vinay Kumar Verma, Jyoti Sharma, Sandeep Kumar, Maya Datt Joshi and Rupesh Kumar

Department of Biotechnology, Shobhit Deemed University, Meerut
E-mail: sps.chrom@gmail.com

Abstract—*An accurate and robust method was optimized for the screening and quantification of pesticides in potato by using gas chromatography based high-resolution mass spectrometry (GC-Orbitrap) in full scan mode. The use of high-resolution full-scan mass spectrometry is an emerging and popular analytical tool for accurate identification and confirmation of pesticide residues in food commodities. Day by day list of analytes keeps on increasing with respect to the consumer and regulatory' sdemand. Existing GC based triple quadrupole is performing till now with the targeted quantitative approach with limitations of the scan speed and resolving power to cover target as well as non-target simultaneously. To fulfill this requirement, a GC-Orbitrap could be one solution which addresses all the challenges. Before the instrument analysis, sample preparation is equally important which can cover as many as possible analytes with theirdifferent physical and chemical properties. In this work, the European quick, easy, cheap, effective, rugged, and safe (EN QuEChERS) method was used. The potential of QuEChERS combined with GC-Orbitrap has been evaluated in terms of sensitivity and selectivity for potato. Target analytes fulfill the identification and confirmation criteria (<5 ppm mass accuracy for precursor and/or product ion(s) with same RT in the extracted ion chromatograms) as per SANTE guideline. The method was quantitatively validated at 0.005, 0.01 mg/kg (default reporting limit) within70-120% recoveries with <20% RSD (precision). Overall, the optimized method is offering excellent sensitivity and selectivity for all theanalytes in potato by fulfilling the SANTE guideline in terms of validation as well as MRLs compliance with the European Union (EU) and Food Safety Standards Authority of India (FSSAI).*