International Association for Food Protection

GIDA GÜVENLİĞİ DERNEĞİ TURKISH FOOD SAFETY ASSOCIATION

# 8th International Food Safety Congress

9-10 May 2024 Istanbul-TURKIYE

"Food Safety is Our Responsibility"

# ABSTRACT BOOK



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# 8th INTERNATIONAL FOOD SAFETY CONGRESS

## May 9-10, 2024

## Istanbul, Türkiye

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# SCIENTIFIC PROGRAM

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**ORAL**

# Method Optimization for Detection of High Polar Plant Growth Regulators and Pesticides in Different Agricultural Commodity Matrices

**Gülden Hazarhun**[1], Burcu Gümül[1], Büşra Maden[2], Kübra Ayyıldız[1], Simge Ertaş Özkan[3], Ecem Ezgi Arabacı[1], Nabi Alper Kumral[4]

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The high polar chemicals as the plant growth regulators, chlormequat and mepiquat, and the herbicides, diquat, are used widely during agricultural practices. The residues of these compounds on fresh agricultural commodities should be monitored because they cause adverse effects on reproduction and development of the mammals. The aim of this study was to validate an analytical method for the detection of these high polar compounds using inhouse method in 4 different matrices representing different groups by using LC-MS/MS. Methods: The raisin, lentil, chestnut and tomato samples without pesticides were provided by Perla Fruit Company. The validation of each compound was evaluated based on SANTE/11312/2021 Guidelines. The extraction of the compounds was conducted by using a inhouse method without PSA-clean up. In the method, 10 g of homogenized sample was weighed in 50 mL polypropylene centrifuge tube and spiked with the standard mixture of the compound to prepare matrix-matched calibration. Then, 10 mL of methanol and 0.1 molar HCl (1:1, v/v) was added to sample tube. After the tubes were shaken for 1 min vigorously, they were put in ultrasonic bath at 80ºC during 15 min. They cooled to room temperature and shaken vigorously for 1 min and centrifuged for 5 min at 3000 g. After centrifugation, the supernatant was filtered with 0.2 µm membrane filter. The final extract was diluted (1:5 ratio) in methanol. Results: The linearities (r2) of all compounds were quite confident (diquat 0.993-0.995; chlormequat 0.991-0.997; mepiquat 0.996-0.999). The LOQ values of diquat, chlormequat and mepiquat were 6.08-7.73; 6.98-9.06 and 5.66-6.79 µg kg-1, respectively. The detection limits were under their Maximum Residue Limits (10-20 µg kg-1) for all compounds. The recovery rates of the compounds for two spike levels (10 and 50 µgkg-1) were calculated between 79-114% and 92-109% for diquat; 87-103% and 104-118% for chlormequat; 86-107% and 86-104% for mepiquat, respectively. The rates did not exceed the confidential interval (70-120%) mentioned in SANTE/11312/2021 Guidelines. The highest repeatability RDSr and reproducibility RDSR values for two spike levels (10 and 50 µgkg-1) were 12.18 and 12.71%, respectively. All values were under the SANTE's limit (<20%). Discussion: The validation data of all compounds for four matrices obtained in LC-MS/MS analysis was quite reliable and



were in line with the SANTE/11312/2021 Guideline. To accurate detection and decrease health risks of these agricultural chemicals, the use of optimized and modified inhouse method in Food Control Laboratories is highly suggested.