OC-10

以 QuEChERS 建立食品中動物用藥-四環黴素類及巨環黴素類多重殘留分析之檢驗方法

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現行食品中動物用藥-四環黴素及巨環黴素之檢驗方法係依據食品藥物管理署 103 年 12 月 10 日部授食字第 1031901795 號公告修定之「食品中動物用藥殘留量檢驗方法－四環黴素類抗生素之檢驗」及 102 年 9 月 6 日部授食字第 1021950329 號公告修定之「食品中動物用藥殘留量檢驗方法—抗生素及其代謝物多重殘留分析」，兩種方法皆以固相萃取，過程費時且溶劑使用量多。本研究在提昇檢驗效率及綠色環保考量下，以 QuEChERS 縮短樣品前處理時間及減少有機溶劑，建立食品中動物用藥中四環黴素及巨環黴素多重殘留分析之檢驗方法。本檢驗方法以 QuEChERS 前處理；檢量線製作採以前萃方式，再利用液相層析串聯質譜儀(LC/MS/MS)分析；測試結果顯示，在肌肉及水產品基質中，四環黴素 7 項之方法定量極限(LOQ)均為 0.005 ppm，巨環黴素 16 項之 LOQ 均為 0.01 ppm；在內臟基質中，四環黴素 7 項之 LOQ 均為 0.05 ppm，巨環黴素 16 項之 LOQ 均為 0.01 ppm。檢量線相關係數 r 均大於 0.99；回收率均在 70 至 120%區間；重複分析之相對差異百分比均<20%。經由各項確效檢驗數據顯示，本方法具高回收率及高精密度，縮短實驗時間及減少有機溶劑等多項之優點，可作為未來方法修正之參考。

OC-10

Development of a Modified QuEChERS Method for the Determination of Veterinary Drug Tetracyclines and Antibiotics and its Metabolite in Food by Liquid Chromatography Tandem Mass Spectrometry

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Current examination methods of tetracyclines & macrolides depended on the official announcement of 1031901795 on 12/10/2014 and 1021950329 on 09/06/2013 by TFDA, respectively. Both methods included solid phase extraction procedure which consuming a large quantity of solvents and time. In order to improve the efficiency of examination and consider environmental protection, QuEchERS was considered to be an excellent approach to achieve the target when executing veterinary drug residues examination for the purpose of shortening process time and reducing solvents usage. In this study, QuEchERS was selected to be a sample preparation method, tetracyclines & macrolides reference standards were added before QuEchERS to create calibration curve, then process the analysis through LC/MS/MS. The results show that the LOQ of tetracyclines and macrolides are 0.005 ppm and 0.01 ppm respectively for both muscle and seafood matrix. For internal organs matrix, the LOQ of tetracyclines and macrolides are 0.05 ppm and 0.01 ppm respectively. The correlation factor (r) of calibration curve for both tetracyclines & macrolides are higher than 0.99, recovery and duplicate performance are located on 70-120% and <20% respectively. Based on all the performance we collected, it demonstrates the capability of this method to achieve the advantages of high recovery/accuracy, short process time and minimal solvents usage. This study could be recommended as a revision for future method improvement.