Molecularly Imprinted Polymer Chitosan-Sodium Tripolyphosphate: Synthesis and Application for Extraction of Antibiotic Residue in Agricultural Products

Eviomitta Rizki Amanda[a*], Alif Sabilillah Lukito Pradana[b], Muhammad Yusril Fitroni[b], Imelda Reza Adzania[b], Wida Nisfi Laili[b], Lilik Nurfadlilah[a,b], Galih Satrio Putra[b]

[a]*Program Studi D3 Teknologi Laboratorium Medis, Universitas Anwar Medika, Jl. Raya By Pass Krian KM. 33, Balongbendo Sidoarjo 61263 telp. (031) 99890135*

[b]*Program Studi SI Farmasi, Universitas Anwar Medika, Jl. Raya By Pass Krian KM. 33, Balongbendo Sidoarjo 61263 telp. (031) 99890135*

[*]*Corresponding author: eviomittarizki@gmail.com*

ABSTRACT. Low concentration of antibiotic residue in a complex matrix of agricultural products make the analysis of residue become a challenging task. Molecularly imprinted polymer (MIP) is a smart sorbent that which was succesfully used in this study for sample preparation stage. A chitosan-based molecularly imprinted polymer (Chi-MIP) was successfully used for extraction tetracycline residue from egg and milk samples. 0.1 gram of Chi-MIP was put into a bag-shaped cellulose filter paper size 2 x 2 cm. The sorbent is added to the solution containing the tetracycline. The extraction process is carried out using hotplate magnetic stirrer and at the end of the extraction process, the analyte is desorbed in an organic solvent with the aid of ultrasonicator. The desorbed analyte was then analyzed using a UV-Vis spectrophotometer at the wavelength 267 nm. The optimization parameters showed optimal results, namely ethyl acetate as desorbing organic solvents, extraction time of 12 minutes, and desorption time of 3 minutes. The results of the method validation on the egg matrix with the standard addition method showed a linearity range of 1-5 mgL^{-1}, correlation coefficient (R^2) of 0.99; percentage of recovery 99.14%; precision 1.62%; LoD 0.29 mgL^{-1}; LoQ 0.98 mgL^{-1}; and an enrichment factor of 3.27 times.