



BOOK OF ABSTRACTS

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DEVELOPMENT AND EVALUATION OF MOLECULARLY IMPRINTED POLYMER FOR THE ENTRAPMENT OF ACEPHATE

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Molecularly imprinted polymer (MIP) is based on the formation of a complex between an analyte (template) and a functional monomer in the presence of a large excess of a cross-linking agent. After polymerization, the template is removed leaving specific recognition sites complementary in shape, size and chemical functionality to the template molecule.

Aim: This research aims at development and evaluation of MIP for the organo-phosphorus pesticide, Acephate.

Objectives: The main objective of this study was to develop a MIP for removal of residual toxin of Acephate which were consumed either accidentally or intentionally.

Methodology: Various initiator concentrations ranging from 0.5 to 1.5% of Azobisisobutyronitrile (AIBN) was tried for Acephate for formation of polymer complexes.

Results: The release and absorption of the template by the respective MIPs was found to be dependent on initiator, monomer and cross linker ratio because of the formation of cavities in the MIPs. Based on the absorption of Acephate by MIP, monomer, cross linker ratio Methacrylic acid: Ethylene glycol dimethacrylate (MAA: EGDMA) 1:0.66 was selected for further studies. Optimized batch showed 93.12% Acephate release in 24 h while 78.12 and 89.36% of its absorption in 2 h and 8 h resp.

Conclusion: The polymer complex prepared for molecular imprinting of Acephate has the ability to rebind the Acephate to the binding sites. The release and absorption of Acephate from polymer complex was affected by changing the monomer and cross linker ratio, initiator used in the polymerization process. The formed polymer complexes have specificity for Acephate.

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