

Tyramine Imprinted Polymers

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Background and Objective: Tyramine is a precursor to dopamine, a neurotransmitter. It is also a dopamine receptor agonist. Tyramine is converted to dopamine, which serves to convert chemical messages across nerve endings. The purpose of this research project was to synthesize and analyze polymer microspheres imprinted with Tyramine for the purpose of separating and monitoring the molecule in the physiological environment.

Methods: The polymerization mixture was stirred to prearrange and purged with nitrogen to eliminate any oxygen in the system. It was incubated at 60°C for 16 hours to begin for polymerization. The template was extracted with a 4:1 Methanol acetic acid mixture and the washes were analyzed spectrophotometrically. Template extraction efficiency, swelling ratios and template rebinding of the polymers in four different solvents were also evaluated.

Results: 49% more template was extracted from the polymer with the lower amount of cross-linker. Tyramine was rebound in highest amount in acetonitrile solvent compared to all other solvents. The non-specific adsorption in buffer and water was found to be high.

Discussions and Conclusions: Results in this present study demonstrated that molecularly imprinted material rebind the template and can potentially be developed to assay Tyramine in body fluids such as urine and blood.

Acknowledgement: South Dakota Biomedical Research Infrastructure Network