Preparation of molecularly imprinted membranes and evaluation of their performance in the selective recognition of dimethoate

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Received 14 April 2010; accepted 3 November 2010

\textsc{A b s t r a c t}

Molecularly imprinted membranes with affinity properties for the pesticide dimethoate were prepared using polyacrylonitrile and its copolymers with two different functional monomers (methacrylic acid and acrylamide) \textit{ad hoc} synthesized. Membranes were prepared via phase inversion technique using N-methylpyrrolidone as the solvent and adding the dimethoate to the casting solution. Membranes without the template were also prepared and used as reference (blank). To evaluate the influence of the two different functional monomers on the binding capacity of membranes toward the template, binding experiments in a dead-end filtration cell were performed. All imprinted membranes made from acrylonitrile copolymers exhibited good recognition properties. Among them, the membrane prepared with the copolymer containing methacrylic acid as functional group, showed the highest binding capacity. In all cases, blank membranes only showed a poor non-specific binding. The selectivity of the imprinted membranes was investigated performing binding experiments in the same operating conditions using the structural analogue triclorphon.

\textbf{Keywords:} Organophosphorus pesticides; Acrylic copolymers; Imprinted membranes; Binding capacity; Selectivity

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