CROSS-LINKED SODIUM CARBOXY METHYLCELLULOSE AS SWELLABLE, DEGRADABLE MATRIX FOR CONTROLLED RELEASE OF PESTICIDE

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ABSTRACT

Sodium carboxy methylcellulose is a water-soluble polysaccharide derivative with excellent gel forming properties. A controlled release system of a pesticide with molluscicidal property, parathion, has been developed by the chemical modification of sodium carboxy methylcellulose into a hydrophobic gel of copper carboxy methylcellulose. Four formulations having slab geometry were developed with two concentrations of the molluscicide and two extents of cross-linking. The release profile of the molluscicides was studied under laboratory conditions. The formulation with a cross-linking period of 48 hours and 20% molluscicide concentration with respect to dry weight of the formulation was found to be stable with a sustained release of molluscide for a period of 25 weeks. The concentration of parathion ranged between 0.05 and 0.19 mg/l at the application rate of one slab/5 l with an average release rate of 5.56 mg/week during the period of study. The activity of the molluscicide was studied against Lymnaea acuminata intermediate host of the liverflukes Fasciola hepatica and F. gigantica.

KEY WORDS: Controlled release, Polymer matrix, Sodium carboxy methylcellulose, Parathion