

## Synthesis and Characterization of Macroporous Poly(Acrylamide-Methacrylic Acid) Cryogel and its Interaction with Clarithromycin

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**SUMMARY.** In this study, macroporous poly(acrylamide/methacrylic acid - PAM) polymers have been prepared and characterized. Swelling characteristics of PAM cryogels and the percentage of macroporosity have been examined. Their macroporosity has been calculated as 51.5% at 120% swelling. The surface and bulk structure of PAM cryogel was examined by scanning electron microscope (SEM). From SEM images, it has been observed that synthesized cryogels have interconnected macropores with 10-100  $\mu\text{m}$  diameters. Drug adsorption of clarithromycin from PAM cryogels was analyzed using Fickian equation. In all adsorption experiments, adsorption exponent "n", which is determining the resulting drug adsorption mechanisms, was found to be between 0.5 and 1. This value shows that the system controlling clarithromycin adsorption from PAM cryogels' membranes is a mixture of swelling and diffusion controlled adsorption. As a result, it has been concluded that PAM cryogels of clarithromycin are suitable for drug adsorption control.

**RESUMEN.** En este estudio se han preparado y caracterizado polímeros macroporosos de poli (acrilamida/ácido metacrílico - PAM) y se ha examinado las características de hinchazón de los criogeles PAM y el porcentaje de macroporosidad. Su macroporosidad se ha calculado como el 51,5% a 120% de la hinchazón. La estructura de la superficie y el volumen del criogel PAM se examinó mediante microscopio electrónico de barrido (SEM). A partir de las imágenes de SEM, se ha observado que criogeles sintetizados poseen macroporos interconectados de 10-100  $\mu\text{m}$  de diámetro. La adsorción de claritromicina de criogeles PAM se analizó utilizando la ecuación de Fick. En todos los experimentos de adsorción, el exponente "n" la adsorción, que determina los mecanismos de adsorción de drogas, se encontró que era entre 0,5 y 1. Este valor muestra que el sistema de control de adsorción de claritromicina en membranas de criogeles de PAM es una mezcla de hinchazón y difusión adsorción controlada. Como resultado, se ha concluido que los criogeles PAM de claritromicina son adecuados para el control de la adsorción de drogas.

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