

〈原 著〉

ポリアクリル酸ナトリウム溶液の性質と ケトプロフェンの溶出挙動¹⁾

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The Viscosity of Sodium Polyacrylate Solution and Release of Ketoprofen from Sodium Polyacrylate Solution

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Abstract

We examined the properties of sodium polyacrylate (PANa) solution at the concentration ranged of 0.1 to 10% and also examined the release of ketoprofen from PANa. PANa solution showed non-Newtonian flow with no thixotropic response in all concentrations. The viscosity was lowered with increasing ionic strength and with lowering pH. Release of ketoprofen (KP) from PANa solution was measured using the modified Franz-type diffusion cell with membrane filter. The release from pH 7 buffer solution (ionic strength 1.0) was prolonged when only 0.1% PANa added, 340 to 140 $\mu\text{g}/\text{cm}^2/\sqrt{\text{min}}$. When 0.5% PANa was added, release rate decreased 45 $\mu\text{g}/\text{cm}^2/\sqrt{\text{min}}$. The PANa concentration was higher than 0.5%, the release rate was depend on the viscosity of the solution. When we used purified water in order to determine the release rate instead of buffer solution, it was almost the same. But when glycerin water mixture was employed, the release of KP was more sustained. These results suggest that the release of KP was sustained by the interaction between PANa and KP, probably hydrogen-bond, when the low PANa concentration. In the case of the PANa concentration was above 0.5%, release was sustained not only by the interaction but also by depression of diffusion.

Key words: sodium polyacrylate, viscosity, ketoprofen, sustained release