Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **32** (6): 911-7 (2013)

Regular Article
Received: April 20, 2013
Revised version: June 8, 2013
Accepted: June 10, 2013

The Effect of Silicon Dioxide Concentrations on Drug Release from Poloxamer/Silicon Dioxide Gel Formulations and their Rheological Characterization

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***SUMMARY*. The purpose of this study was a preliminary investigation of different concentrations of hydrophilic silicon dioxide (A200) on the release of water soluble drug. Isoniazid was used as a model drug. Different formulations of gels were prepared and their rheological characteristics, dissolution profile and dispersion stability were studied using poloxamers of different viscosity. The results of this preliminary work showed that most of the gels made with selected liquid poloxamers have a little change in apparent viscosity on storage. The apparent viscosity for each gel was found to be dependent on the viscosity of poloxamer from which the gel was prepared. The release rates of isoniazid is related to the aqueous solubility of drug, viscosity of poloxamer and the silicon dioxide concentration. There was decreased tendency for disperse phase sedimentation with increasing poloxamer viscosity as well as the concentration of hydrophilic silicon dioxide. Rheograms of two pure poloxamers showed newtonian behavior whereas each gel and its formulations were exhibited thixotropic behavior. *In vitro* dissolution studies showed that all the stable formulations followed first order kinetics and showed the tendency of fickian release.**

KEY WORDS: Aerosil 200 (A200), Fickian release, Poloxamer, Rheology, Thixotropy, Viscosity.

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