Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **29** (5): 659-66 (2010)

Original Article

Received: October 14, 2009
Accepted: November 22, 2009

Studies on Ion-Exchange Resin Complex of Dextromethorphan Hydrobromide

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SUMMARY. **The objective of present work was to assess ion exchange resins for taste masking of Dextromethorphan Hydrobromide (DM) - a highly bitter drug. A strong cationic exchange resin (Amberlite® IRP-69) and weak cationic exchange resin (Amberlite® IRP-64) were evaluated. Based on drug loading efficiency, Amberlite® IRP-69 was selected for further evaluation. The effect of different methods of drug loading, drug: resin ratios and particle size on drug complexation was evaluated. The formation of a resinate was confirmed based on Differential scanning calorimetry (DSC), X-ray powder diffraction (XRPD), Fourier transmission infra-red spectroscopy (FT-IR). The results from loading studies at different drug: resin ratios, 1:1, 2:1 and 3:1, indicated that, the drug loading achieved were 78%, 49% and 25% w/w, respectively. For a defined drug:resin ratio, resin particle size of 45-63μm showed highest drug loading whereas, resins with higher particle size, 125-150 μm showed the lower drug loading. The X-ray diffraction spectra showed absence of crystalline peaks indicating formation of resinates. DSC and XRPD showed that the molecular state of the entrapped drug in resinates changed from crystalline to amorphous state regardless of drug loading. The complexes were evaluated for bulk density, angle of repose, taste masking and *in vitro* drug release. *In vitro* drug release studies showed more than 80% drug release from resinate prepared with Amberlite IRP 69 within 30 min. Based on the studies we can conclude that taste masking of Dextromethorphan Hydrobromide could be accomplished using a strong cationic ion exchange resin with a particle size 45-63 μm at a 1:1 Drug: Resin ratio.**

KEY WORDS: Dextromethorphan Hydrobromide, Drug loading, Ion-exchange resin, Taste masking, Resinates

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