In this study, the addition of hydrophilic pore former - hydroxypropyl methylcellulose (HPMC) to an ethylcellulose film coating, applied in an isopropanol:water-alcohol (9:1) solution was studied. The pore former addition resulted in modulating and completing drug release over 24-hour dissolution testing. Dissolution rates increased with increasing concentration of pore former.

**Drug Layering of Sugar Spheres**

Chlorpheniramine maleate (CPM) was coated onto 18/20 mesh SugarSpheres®, drug layering substrate (Colonna), to a target drug load of 30 mg/g using a Pam-Glatt fluid bed coater (FBE-125 equipped with a Würster column, 360 mm length) using HPMC (METHOCEL® EL, premium cellulose ethers; Dow Wolff Cellulose) as a binder. The aqueous drug layering solution comprised CPM (70%), METHOCEL E6 (30%) in purified water. Ethylcellulose Coating of Drug Layered Sugar Spheres Coating solutions of ETHOCEL™, premium ethylcellulose polymers, Standard 10 (Dow Chemical Company) and various low viscosity grades of HPMC E-series (2010) polymers were prepared in an isopropanol (IPA):purified water (90:10) solvent mixture. The HPMC content ranged from 0-30% in the polymer blend. Dibutyl sebacate (Veystar), 10% w/v with respect to the total polymer content, was added as a plasticizer. The content of the film coating compositions in the solvent mixture was 7:3. CPM beads were coated to a 10% w/w film weight gain in each case using a Glatt GPCG 1.1 fluid bed coater (Pam Glatt Pharma Technologies).

**Drug Loading of Sugar Spheres**

Chlorpheniramine maleate (CPM) was coated onto 18/20 mesh SugarSpheres® using the same formulation as described above with the following differences: the purified water content was replaced with 30 mg/g of CPM (70%)+METHOCEL E6 (30%) using a Würster column. The coated beads were sieved through a 18/20 mesh sieve to produce a uniform coating of CPM.

**Discussion**

The addition of HPMC to ETHOCEL barrier membrane coatings resulted in complete drug release over 24 hours. Dissolution rate and extent of drug release increased with increasing HPMC content and also modestly with increasing molecular weight of the HPMC. The HPMC of lower viscosity provided coating solutions of lower HPMC content. The HPMC content influenced film mechanical properties, while the HPMC viscosity did not significantly influence film mechanical properties. CPM beads coated with EC solutions containing HPMC yielded stable release profiles at six months storage at accelerated conditions. The results demonstrate the utility of HPMC as a pore former in modulating drug release from organically applied ethylcellulose film coatings, thereby ensuring complete terminal drug release.