



PIC QUESTION OF THE WEEK: 12/6/2004

Q: Can omeprazole be prepared as an extemporaneous suspension? Are there any comparable products that could be administered in liquid form?

A: The stability of omeprazole (Prilosec) and other proton-pump inhibitors (PPIs; Prevacid, Protonix, etc.) is a function of pH. They undergo rapid degradation at the acidic pH of the stomach, but have acceptable stability under alkaline conditions (pH>6). This problem has been overcome by formulating omeprazole as an enteric coated pellet that allows for drug release in the proximal portion of the small intestine. Omeprazole capsules can be opened and the pellets placed in apple, orange, or cranberry juice for immediate administration. For many years, pharmacists have made extemporaneous suspensions by opening the capsules, crushing the pellets, and suspending the drug in an 8.4% solution of sodium bicarbonate. This product has been shown to be stable for 45 days in the refrigerator and 30 days at room temperature. A similar formula has been investigated for lansoprazole (Prevacid); however, its stability in 8.4% sodium bicarbonate is 14 days in the refrigerator and only 8 hours at room temperature. These products should always be dispensed in amber containers.

Lansoprazole is commercially available as granules for oral suspension. The contents of each packet should be mixed with 2 tablespoons of water and administered immediately. This dosage form can be given by mouth or through a nasogastric (NG) tube. Lastly, a new formulation of immediate-release omeprazole (Zegerid; Santarus) has recently been approved by the FDA. Each packet contains 20mg of omeprazole powder, sodium bicarbonate (1.68 grams) and peach-mint flavoring. The contents should be placed in two tablespoons of water and consumed immediately. Although unlabeled, Zegerid has been administered through nasogastric and orogastric tubes.

References:

- DiGiacinto JL, Olsen KM, Bergman KL, et al. Stability of suspension formulations of lansoprazole and omeprazole stored in amber-colored plastic oral syringes. *Ann Pharmacother* 2000; 34:600-5.
- www.zegerid.com (accessed 12/3/04).

Katie E. Heffner, Pharmacy Clerkship Student
Allan C. Haddad Jr., Pharmacy Clerkship Student