

Correspondence

Reply

To the Editor:

Amoxicillin can be obtained as a pure acid (molecular formula: $C_{16}H_{19}N_3O_5S$, molecular weight: 365.4) or as a trihydrate (molecular formula: $C_{16}H_{19}N_3O_5S \cdot 3H_2O$, molecular weight: 419.45). The intravenous form, previously used in Europe, is typically a sodium salt of the pure acid. The oral form, currently in use worldwide, is the trihydrate. Since the mid 1990s, we have used the sodium salt of the pure acid form of amoxicillin, at a concentration of 0.01 mol, obtained from Sigma-Aldrich Chemicals (St Louis, Mo), for our skin testing.¹ The key point is not whether you force amoxicillin, in either form, into solution at a high or low pH, as noted by Tsuji and coworkers,² but what is the solubility of amoxicillin at a physiologic pH near 7.4 where you would want to use it for skin testing and what is the pH of the high-concentration amoxicillin skin testing materials used by Montañez and coworkers?³ The U-shaped solubility for all amino-penicillins in aqueous solution is noted by Tsuji and coworkers in their Figure 5.²

The Sigma Chemical package insert for amoxicillin, as the pure acid (Product Number A 8523), states that this product is soluble in 1 mol of ammonium hydroxide up to 50 mg/mL, yielding a clear, colorless to light yellow solution. A study of the solution stability of amoxicillin sodium at 10 mg/mL in sterile water noted a starting pH of 8.7, with a fall from 0.1 to 0.4 pH units over a range of 10% to 80% amoxicillin loss.⁴

In any case, use of amoxicillin, at 0.01 mol or about 3.65 mg/mL in buffered saline at pH 7.4, is adequate to safely evaluate patients for IgE-mediated amoxicillin allergy.⁵ Amoxicillin appears to be a valuable adjunct to commercially available penicilloyl-polylysine (Pre-Pen; ALK, Round Rock, Tex), used at 6×10^{-5} mol, and

native penicillin, like amoxicillin used at 0.01 mol, when evaluating patients with a history of penicillin allergy to identify additional skin-test-positive individuals. This may reduce the number of positive oral challenge reactions, though this has not been proven. All patients with negative penicillin skin test results—whether amoxicillin is used or not—should still undergo an oral amoxicillin challenge.⁶

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