



## PIC QUESTION OF THE WEEK: 07/11/05

Q: Can a person with a “sulfa” allergy receive gentamicin sulfate?

A: Although the answer may be obvious to many, it is amazing how often this situation arises. The question of “sulfonamide” allergy and cross-reactivity occurs frequently in all types of pharmacy practice. Today, the long-standing dogma that “sulfonamide-like” drugs must be avoided in patients with this type of history has generally been abandoned. A major difference between antimicrobial sulfonamides (hereafter referred to as sulfas) and most other compounds in the “sulfa” class is the presence of an unsubstituted  $\text{NH}_2$  group at the  $\text{N}_4$  position. Oxidation at the  $\text{N}_4$  position results in production of a reactive hydroxylamine metabolite that becomes haptenated and stimulates an immunologic response. This intermediary can also be converted to metabolites that may be directly toxic. Non-antimicrobial sulfas (e.g. most diuretics, celecoxib, sulfonyleureas, acetazolamide, etc.) have various substitutions at the  $\text{N}_4$  position and do not have the same tendency to produce similar allergic reactions. Likewise, a distinction must be made between sulfur, sulfates, sulfites, and *sulfas*. Other than the presence of the sulfur atom, none contains the antigenic site associated with antimicrobial sulfas such as Bactrim®. Patients thought to have a sulfa allergy can safely be prescribed sulfur-containing medications, sulfate salts (e.g. gentamicin and morphine sulfate), and drugs containing any of the antioxidant sulfites included as inactive ingredients. Bisulfites and meta-bisulfites are used as antioxidants in foods, beverage, and pharmaceuticals. Cases of bronchospasm, urticaria, etc. have been associated with the use of sulfites; however, there is no evidence the compounds produce similar reactions in patients sensitive to antimicrobial sulfas. In conclusion, sulfur, sulfates, and sulfites do not pose a risk to patients with a history of *sulfa* allergy.

### References:

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- Tilles SA. Practical issues in the management of hypersensitivity reactions:sulfonamides. *South Med J* 2001;94:817-24.
- Strom BL, Schinnar R, Apter AJ, et al. Absence of cross-reactivity between sulfonamide antibiotics and sulfonamide nonantibiotics. *N Engl J Med* 2003;349:1628-35.

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