

'Sulfa' Drug Allergy

by Ann Gerhardt, MD February 2015

Bottom line at the top: It is very unlikely that people with an allergy to sulfa antibiotics will also react to other biologics whose name has a "sulf" in it.

A reader asked: "If I am allergic to sulfa-based medicines, is it okay to take DMSO (dimethyl sulfoxide) or glucosamine chondroitin sulfate? I read different opinions and am perplexed."

Sulfur is an element, like sodium, silver and helium. Sulfur is ubiquitous in nature. Our body's proteins naturally contain sulfur-containing amino acids. Sulfur and sulfur-containing antibiotics are too small to trigger the immune system to an allergic response.

"Sulfa" is the short name for a class of antibiotics whose structures include sulfur embedded in complexes called **sulfonamides**. The most common sulfonamide antibiotic in the U.S. is trimethoprim-sulfamethoxazole (brand name Bactrim or Septra). Sulfonamides are sufficiently foreign to our bodies that our immune system might notice attack them.

The immune system attacks foreign things, for example pollen, bacteria, particulates and complex chemicals in medications or herbs, in an attempt to get rid of them. Sometimes we do this calmly, as when we prevent a virus from causing an infection. Sometimes there is a hyper response, typically in people who have a tendency to allergies. In either case, what the immune system attacks is just a portion of the foreign substance, called an antigen.

The immune system is only moderately selective in its attack. Once it has targeted a particular antigen as something it should attack, it might also attack similar, but not exactly the same, structures. That is called cross-reactive. Sulfonamides all have very

slightly different chemical structures, enough alike to trigger cross-reactive allergic responses in a person who has reacted to one of them.

Other medications that contain sulfonamide structures are listed at the end of this article. They have a variable degree of resemblance to the sulfonamides in sulfa antibiotics. Cross-reactive allergy to them is not common. There is no way to predict if a person who has had a reaction to a sulfa antibiotic will be allergic to any or all of these drugs.

To answer the question posed, DMSO and chondroitin sulfate have non-sulfonamide structures and are sufficiently different from sulfa antibiotics that the immune system would not see them as cross-reactive. If there is a reaction, it is likely two different allergies.

For the same reason, there are a lot of medications that contain sulfur in non-sulfonamide structures which will not trigger a cross-reactive allergy.

As long as we are discussing reactions to sulfur entities, I should mention **sulfites**, which are strong antioxidants used to prevent browning of dried fruits and oxidation of other foods. Some intravenous medications contain sulfites to prevent degradation in storage. Sulfite sensitivity can cause a seriously life-threatening asthma attack or merely unpleasant hives or mundane allergic symptoms. There is no structural similarity between sulfites and sulfa antibiotics and the two 'allergies' are not related.

Non-antibiotic sulfonamide drugs, uncommon causes of allergic reactions: acetazolamide, bosentan, bumetanide, celecoxib, chlorothiazide, chlorthalidone, diazoxide, dofetilide, dorzolamide, dronedarone, furosemide, glyburide and other sulfonamide anti-diabetic agents,

hydrochlorothiazide, ibutalide, indapamide,
metolazone, probenecid, sotalol, sulfasalazine,
sultiame, sumatriptan, tamsulosin, torsemide,
zonisamide and some of the anti-HIV medications.