



Sulfite Sensitivity

Literally thousands of agents are added to the food we consume during the preparation and manufacturing process. These include preservatives, antioxidants, stabilizers, conditioners, thickeners, flavorings, colorings, sweeteners, antimicrobial agents, modifiers, anti-caking agents and texture modifiers.

These agents are generally regarded as safe (GRAS) and only a few have been associated with allergic reactions. The most common association has been made with the FD&C dyes, particularly tartrazine. Other documented reactions involve sulfites, which were first used in 1664 and were approved back in the 1800s.

The Food and Drug Administration lists six sulfite agents as GRAS. These include sulfur dioxide, sodium sulfite, and both the bisulfites and metabisulfites of sodium and potassium.

Sulfiting agents are used to:

- Prevent oxidation and browning of light-colored fruits and vegetables such as apples and potatoes
- Prevent melanosis or black spots on shrimp and lobster
- Control microbial growth in fermenting beverages such as wine
- Prevent decomposition by hindering the growth of bacteria
- Preserve flavor
- Prevent spoilage
- Condition dough
- Bleach food starches
- Stabilize and maintain the potency of medications

By law, sulfites may not be used on foods meant to be eaten raw, such as fruits and vegetables. Nor can they be used on fresh produce or in restaurant salad bars. Food manufacturers and processors are legally required to disclose the presence of sulfiting agents in concentrations of more than 10 parts per million, whether the sulfites are used during processing or are components of an ingredient in the food.

Regardless of the amount present, sulfites must be listed if they are used as a preservative or for certain functions in food, such as conditioning dough. Standardized foods such as pickles and bottled lemon juice must list sulfites on the label. Efforts have been made to rescind the status of GRAS on sulfited foods such as frozen potatoes, but the food industry has successfully opposed every effort to date.

Effects of Sulfites

Sulfite is a well-known air pollutant that is toxic to humans. When sulfur dioxide (a by-product of fossil fuel combustion) comes into contact with fluids that line the airway, it is converted into sulfite. Metabolism of sulfur-containing amino acids also results in the production of sulfite, but an enzyme, present in tissue, detoxifies sulfites by oxidizing them into sulfates.

A deficiency of this enzyme in humans can be fatal. Sulfites are also known to activate a certain cell of inflammation leading to the production of oxygen radicals. Hence sulfite levels are closely regulated in the body.

Sulfites have been associated both with occupational disease and death. For instance, shrimp fishermen who use dry sodium metabisulfite, commonly called shrimp dip, have had fatal reactions when the sodium metabisulfite reacted with acids and water to release toxic sulfur dioxide gas. Sodium metabisulfite is more potent than sodium bisulfite in its ability to release sulfur dioxide gas.

The toxic effects of sulfites can trigger allergic reactions. Symptoms of sulfite sensitivity include asthma, hives, tissue swelling, abdominal pain, nausea, diarrhea, seizures and shock resulting in death. Levels as low as one part per million can trigger asthma. Symptoms also include:

- Severe respiratory reaction
- Flushing
- Feeling of temperature change
- Vomiting
- Difficulty swallowing
- Dizziness
- Contact dermatitis

Occurrence of Sulfites

Sulfites occur as a result of fermentation and are found in:

- A variety of cooked, processed and baked food
- Dried fruits, canned vegetables, guacamole and maraschino cherries
- Condiments, jams, gravies, dehydrated or pre-cut or peeled potatoes, molasses, shrimp, and soup mixes
- Beverages such as wine, beer, hard cider, fruit and vegetable juices, and tea

Processing of food ingredients including beet sugar, corn sweeteners and gelatin can also generate sulfites.

Sulfites also occur naturally in a number of foods such as maple syrup, pectin, salmon, dried cod, corn starch, lettuce, tomatoes, soy products, eggs, onions, garlic, chives, leeks and asparagus.

Sulfites and Asthma

Generally, sulfite sensitivity is found in people with asthma who are steroid dependent. In steroid-

dependent children, the prevalence has been found to be 20%. Reactions to sulfites can vary from mild to severe and even fatal bronchospasm in about 5% to 10% of patients with asthma. Sensitivity to sulfites is found more often in women than in men.

Sulfite sensitivity has also been linked to allergy. It is generally not found in persons who are both non-allergic and non-asthmatic. Even in patients who are sensitive to inhaled sulfites, the ingestion of foods containing sulfite may not cause a reactions, since the reaction depends on a number of factors.

There is no clear understanding of the mechanism by which inhaled sulfites trigger bronchospasm. It may be due to the formation of sulphur dioxide within the airways that affects the airway mucosa, and to some extent activates both the allergic antibody (IgE) and bronchoconstriction.

Some asthma medications contain sulfites. Sulfite can trigger bronchospasm in a dose-related manner. For instance, both isoproterenol and isoetharine contain sulfite in sufficient dosage to trigger bronchospasm in most patients with asthma. They can also give rise to bronchospasm in those with asthma who are not sulfite sensitive.

Sulfite sensitivity should not be confused with sulphates or with sulfur drugs. Patients with sulfite sensitivity should avoid all forms of sulfite.