# ScentArest: Support for Chemical Intolerance

*by Mark Force, DC*

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## ScentArest Intro

ScentArest is a formula that supports enzyme systems responsible for catabolism of naturally-occurring and man-made chemicals that patients are exposed to through food and the environment.

### ScentArest - Origins and Clinical Trial

ScentArest was originally designed for people who experience severe reactions to wine. The formula was developed and refined over a 12 year period culminating in a 6 week clinical outcome study (N=13) of patients in my practice that had significant wine intolerance.

Criteria for inclusion were patients who had quit drinking wine, though continuing to desire wine, as a result of the severity of headaches triggered by 5 ounces - a standard glass - of wine or less.

Subjects in the study took ScentArest at 2 capsules BID for the first 4 weeks and 1 capsule BID for the remaining 2 weeks of the study. Wine intakes controlled during this period with a trend toward greater intake over the six week period. This led to the final challenge of 10 ounces of wine - 2 standard glasses of wine - with a meal. The wine used was individualized for each patient to the particular varietal and vintner that historically would most consistently trigger headache.

This wine challenge resulted in 85% of subjects experiencing complete relief from a wine headache. Those subjects experiencing complete resolution of wine-triggered headaches were also free of all other symptoms typically triggered by wine consumption.

Subjects from this study also reported relief from reactions to foods and environmental exposures that had historically triggered reactions.

### Prevalence of Chemical Intolerance

A German study from 2012 determined that wine intolerance is found in 9% of women and 5% of men. This is indicative of chemical intolerance generally in that the chemical compound families that people are intolerant to in wine and the enzymes involved in their catabolism are the same as for those in food and the environment.[1] Previous study from Germany (2005) found the incidence of chemical intolerance to be approximately 9%.[2]

Studies of the prevalence for chemical sensitivity/intolerance in the US are illuminating and indicate the complexity of the issue at the same time. Interview of randomly selected individuals (continental US) found that “11.2% of Americans reported an unusual sensitivity to common chemical products such as perfume, fresh paint, pesticides, and other petrochemical-based substances” and “31.1% of those sampled reported adverse reactions to fragranced products, and 17.6% experienced breathing difficulties and other health problems when exposed to air fresheners.”[3]

A study from 2003 of a random sampling of individuals from the Atlanta, Georgia metropolitan area showed that 12.6% of the sample reported chemical hypersensitivity. It was found that for 55% of the hypersensitive group intolerance was initiated by exposure to pesticides or solvents. Emotional disorders appear to be associated outcome of environmental intolerance with a 37.7% incidence of emotional disorders developing after the onset of physical symptoms while only 1.4% of this group had a had a history of emotional disorders prior to onset of chemical intolerance symptoms.[4]

The differential of chemical sensitivity/intolerance incidence between the US and Europe is most likely due to lax standards regulating exposure to chemicals from food and the environment in the US when compared to Europe.[5]

## The Chemical Intolerance - Food Intolerance - Systemic Inflammation Connection

Food intolerance is an inflammatory response mediated reaction to food. It is not immunologically mediated and, as such, is not food allergy.

Food intolerance is common and will commonly cause false positive results on food allergy testing. Since mediation of food intolerance is inflammatory it will often promote intestinal wall inflammation and permeability. These patterns will promote systemic inflammation and result in a pattern of multiple low grade false positive results upon allergy testing.[6]

It is common to see the overlap of genetically predisposed mitochondrial dysfunction and chemical intolerance in patients with food intolerance. The Citric Acid cycle intermediate alpha-ketoglutarate (AKG) has been shown to control intestinal wall inflammation.[7]

Fasting of 7-10 days results in significant clinical improvement of rheumatoid arthritis patients that is lost when these subjects return to eating.[8] This pattern is often a result of down-regulation of inflammation via avoidance of food intolerance mediated inflammation.

Food additives, primarily man-made phenolic compounds, appear to promote intestinal permeability, inflammation, and low grade autoimmune response.[9]

Impaired sulfation of phenolic compounds and tyramine has been associated with chemical and food intolerance, systemic inflammation, and autoimmune and neurodegenerative conditions.[10]

## The Chemical Intolerance - Complex Illness Connection

A recent research study (2012) conducted in Austin, Texas family practices indicates that approximately 20% of patients seeking care in a family practice are chemical intolerant.

Furthermore, the chemical intolerant cohort seeking care in a family practice setting "reported significantly higher rates of comorbid allergies and more often met screening criteria for possible major depressive disorder, panic disorder, generalized anxiety disorder, and alcohol abuse disorder, as well as somatization disorder…Controlling for demographics, patients with chemical intolerance were significantly more likely to have poorer functional status, with trends toward increased medical service use when compared with non–chemically intolerant patients."[11]

Here is a description in the literature of the complex and chronically ill patient that you see regularly - daily? - in your practice. This is the laundry list patient, the been there and done that patient, the sick and tired of being sick and tired patients, the “you’re my last resort” patient…

So, what to do and where to go? Let’s go back to wine…

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## Wine Unlocks the Mystery of Chemical Intolerance Illness

Twelve years ago my investigation into chemical intolerance started with wine. My understanding of the the import of wine intolerance as a vector of chronic and complex illnesses keeps expanding. Wine is still a solid standard for the reach and depth of chemical intolerance in the realms of food and environmental intolerance and chronic, complex, elusive, and resistant conditions that include systemic inflammation and pain, headaches, fatigue, digestive problems and abdominal pain, depression, ADD, ADHD, OCD, anxiety, insomnia, fibromyalgia syndrome, chronic fatigue syndrome, CFIDS.
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The complexity of wine is what made it such a great subject for helping me to understand the biochemistry of chemical intolerance. White wine may not have given me the whole picture but the reds completed it.

After years of study the key chemical compound families involved in chemical intolerance came into clear view - aldehydes, phenolic compounds, sulfites, the biogenic amines histamine and tyramine, prostaglandins, and miscellaneous congeners that represent the various man-made environmental chemicals and pollutants metabolized in the Cytochrome P450 pathway.

It was a long process developing a reliable nutrient formulation that supported enzyme systems involved in catabolism of all of these chemical compunds. Sometimes, when talking about ScentArest I liken it to the blending of various grapes with different characteristics to create a fine Bordeaux where the sum is more than the parts.

So here are the parts -

Description: Each capsule contains Vitamin E (as d-alpha tocopheryl actetate and mixed tocopherols) 50 IU. Thiamine (as cocarboxylase chloride) 1 mg. Riboflavin (as riboflavin-5-phosphate) 2 mg. Niacin (as niacinamide) 10 mg. Vitamin B6 (as pyridoxal-5-phosphate) 6 mg. Folate (as 5-MTHF glucosamine salt) 100 mcg. Selenium (from vegetable culture* and selenomethionine) 50 mcg. Molybdenum (from vegetable culture and molybdenum glycinate) 150 mcg, Quercetin 50 mg.

Proprietary blend of raw organic plant juices (barley, wheat, oat, alfalfa, kamut), raw organic vegetable sprout concentrates (broccoli, cauliflower, kale), raw organic vegetable juices (beet, carrot), organic acerola berry extract, organic peppermint leaf). Note: Wheatgrass juice contains no gluten.

Now, let’s look at these chemical intolerance triggers in turn…

## Chemical Compound Families That Trigger Chemical Intolerance

Note: Almost universally the nutrients referred to below are in ScentArest. If they are not I will make note of it and give you the rationale for the nutrient not being included in the ScentArest formula. Nutrients are enzymatic/activated forms or in their most available forms as people with chemical intolerance tend to have genetic patterns that limit conversion and absorption.

### Sulfites

Background

Sulfites are commonly attributed to be **the** cause for wine intolerance. It is certainly a trigger for some people, but is not the most common one by far.

Sulfites occur naturally in some foods - it is naturally found in wine, for instance - and is produced during fermentation, so wine and other fermented or pickled foods contain sulfites. The greatest exposure for most people is through sulfite food additives. Sulfite is added to foods as a preservative - maintains food color and prolongs shelf-life - and prevents the growth of micro-organisms and bleaches food starches (i.e. potato) to prevent browning from oxidation.

Food Sources

When sulfite is added to foods it will show up on the label as potassium bisulfite, potassium metabisulfite, sodium bisulfite, sodium dithionite, sodium metabisulfite, sodium sulfite, sulfur dioxide, sulfites and sulfiting agents. Sulfite is a by product of fermentation so any food that has been fermented or pickled will contain sulfite.

Symptoms of Intolerance

Reactions to sulfite sensitivity look like allergic reaction, though it is not a true allergy. Reactions to sulfites In some people can be severe, obstructed breathing, and require hospitalization. If your sensitivity were that severe you'd already know it.

Here we are considering allergic-type reactions that can include:

- Flushed face, hives or a rash, red and itchy skin
- Swelling of the eyes, face, lips, throat and tongue
- Trouble breathing, speaking or swallowing
- Anxiety, distress, faintness, paleness, sense of doom, weakness
- Cramps, diarrhea, vomiting
- A drop in blood pressure, rapid heartbeat, loss of consciousness

Symptoms can also include abdominal and generalized muscle and joint pain.

These symptoms may be subtle. There is some degree of evidence that sulfite inflames the intestinal wall and causes generalized/systemic inflammation.

Confirmation of Intolerance

Consistently experiencing the above symptoms after consuming sulfite-rich foods.

Plan
Sulfite oxidase is a molybdenum oxotransferase. Other enzymes included in the molybdenum oxotransferase family are nitrite oxidase, dmso reductase, aldehyde oxidase, and xanthine oxidase.

Molybdenum and riboflavin promote all of the molybdenum oxotransferases including sulfite oxidase. The polymorphism is SUOX. Have patient avoid sulfite food additives.

## Nitrites

Background
Nitrites are similar to sulfites - toxic, added to foods as a preservative, and metabolized by enzymes in the same family as sulfites (molybdenum oxotransferases).

Food Sources
Nitrites are added to cured meats - bacon, hot dogs, lunch meats - to prevent growth of bacteria. Fermented meats - bologna, salami, corned beef, ham, sausage - and smoked meats contain nitrites.

Symptoms of Intolerance
Same as for sulfites.

Confirmation of Intolerance
Consistently experiencing symptoms similar to sulfite intolerance after consuming nitrite-rich foods.

Plan
Molybdenum and riboflavin promote all of the molybdenum oxotransferases including nitrite oxidase. Have patient avoid nitirite food additives.

## Aldehydes

Background
Aldehydes are toxic compounds that are broken down to harmless acetic acid (vinegar) by an enzyme, acetaldehyde dehydrogenase. We are exposed to aldehydes through both food and the air since aldehydes are very volatile and aromatic. Because of this aldehydes are a particularly common trigger for both food and environmental intolerance.

Food Sources
Dietary sources for aldehydes are fermented/cultured foods - wine, beer, spirits, cheese, yogurt, kefir, sauerkraut, pickles, kimchi, kombucha, tofu, miso, tempeh. Frying food produces toxic aldehydes.

A non-dietary source of aldehydes is production in your intestines by naturally-occurring yeasts as a by-product of fermentation. While yeasts are normally present in your intestinal flora, imbalances in the normal bacteria in your intestines can lead to an overgrowth of yeasts and lead to an increased production and burden of aldehydes in your system. Molds in the environment off gas aldehydes.

Environmental Sources
Aldehydes are toxic compounds that are very aromatic and volatile. They tend to have a strong smell. Aldehydes are toxic - think formaldehyde. Aldehydes are neurotoxic and this is why the symptoms tend to be emotional and cognitive.

Air fresheners, scented candles, essential oils, cleaning products, cologne, perfume, cosmetics, scented soaps, detergent, fabric softener, gas fumes, auto exhaust, cigarette smoke, plastics, paint, plywood, particle board, glue, foam, fabric, upholstery, dyes, carpeting, flooring, furniture.

VOCs (volatile organic compounds) are rich in both aldehydes and phenolic compounds. Mold off-gasses aldehydes as do many foods (i.e. bananas, strawberries, almonds).

My clinical observation over the years has led me to the opinion that the most common environmental trigger for headaches are air fresheners. Chronic headaches that have no diagnosis despite extensive medical work-up and are not due neck and/or jaw stress usually end up being at least in part due to aldehyde or phenolic compound intolerance.

Symptoms of Intolerance
Fatigue, mood swings, brain fog, confusion, irritability, inability to concentrate and recall, lack of focus, anxiety, depression, addictive behaviors, insomnia, headaches, sensitivity to noise and smells.

Confirmation of Intolerance
Decreased symptoms with avoidance of aldehyde-rich foods. Provocation of symptoms with intake. Aldehyde intolerance is associated with a very low tolerance of alcohol. Sensitivity and reactions to certain scents especially air fresheners, colognes, perfumes, fabric softeners, dry cleaned clothes, new carpet and furniture. Reactions to moldy rooms.

Plan
Decrease or avoid high-aldehyde foods. Improve intestinal flora by using a high natural fat diet that is primarily plant based (refer to Nourishing Traditions by Sally Fallon). Avoid environmental exposures to aldehydes.

Promote the enzymes that metabolize aldehydes. Molybdenum and riboflavin promote the molybdenum oxotransferase aldehyde oxidase. Riboflavin, niacinamide, selenium, and vitamin E promote aldehyde dehydrogenase. The polymorphism for aldehyde dehydrogenase is ALDH.

## Phenols

Background
Phenolic compounds are naturally found in plants. They play an important roles metabolically in plants and animals. Phenolics regulate metabolism, hormones, neurotransmitters, act as antioxidants, and the medicinal qualities of many medicinal plants are due to phenolic content.

Food Sources
High concentration sources of phenolic compounds are tomatoes, fruit (apples (cider), berries, citrus (oranges, grapefruits, tangerines, lemons, limes, etc.), bananas, oranges, grapes, watermelon, cantaloupe, peanuts, coffee, tea, cocoa (chocolate), wine, honey, milk, walnuts.

Other sources to consider are almonds, apricots, cherries, peaches, plums (prunes), cucumbers (pickles), grapes (raisins), currants, nectarines, peppers (bell, chili).

All herbs and spices are high in phenolic compounds.

Synthetic/artificial colors and flavors are particularly concentrated in complex phenols that are difficult to metabolize - MSG, FD&C colors, vanillin. Synthetic preservatives (BHA, BHT) and sweeteners are also troublesome - aspartame, Splenda. These compounds are not only powerful triggers for reactions, but also inhibit the enzyme - phenol-sulfotransferase - that metabolize phenols.

Environmental Sources

Phenolic compounds are generally quite aromatic/volatile compounds that evaporate into the air at room temperature. They are biologically active xenobiotic compounds that trigger reactions in sufficient concentration/exposure. There is wide range of tolerance predicated upon genetic predisposition.

Plant oils, woods (pitch is very high in phenols), leather, paint, stain, glue, VOCs (plywood, particleboard, glues, drapes, fabrics, foam, wood, kerosene, tobacco, perfume, hair spray, cleaning agents, dry cleaning, paints, lacquers, varnishes, hobby supplies), copying and printing machines. Fungicides, herbicides, and pesticides are phenolic.

Symptoms of Intolerance

Mood swings (can be extreme), headache, irritability, aggressive behavior, feel overstimulated (may trigger hyperactive behavior), anxious, insomnia, nightmares, sleep walking, bed-wetting (enurisis), night sweats, dark circles under eyes, redness of face and ears, fatigue, abdominal pain, gas, bloating, indigestion, constipation and/or diarrhea.

Confirmation of Intolerance

Avoidance of triggering foods and/or phenolic rich VOCs improves symptoms and provides relief.

Plan

Avoid foods and VOCs that are high in phenolic compounds.

Focus on artificial/synthetic food additives first - flavors, colors, preservatives, and sweeteners. It can be quite startling to realize how dramatically and rapidly artificial phenolic compounds in the diet can trigger symptoms once you have observed the connection between diet and behavior.

Once you have determined intolerance to synthetic phenolic compounds in the diet, observe intolerance to high concentration dietary sources of phenolic compounds.

Avoid using fungicides, herbicides, and pesticides in your garden. Use HEPA-rated air purifiers in your home to filter phenolic compounds from ambient air.

Phenol-sulfotransferase (PST) is the enzyme that metabolizes phenolic compounds. Nutrient cofactors for the promotion of PST are B6, folic acid, magnesium, and sulforaphane. The Brassica family - cruciferous vegetables are a source for this very efficient form of dietary sulfur. Research has shown a single meal including including broccoli increases PST.[12] ScentArest utilizes broccoli sprouts, a particularly potent source of sulforaphane.

B12 is not in ScentArest though it promotes PST. This is due to the variability of need for and form needed in the chemical intolerant cohort. Hydroxocobalamin (B12-2000) is the recommended form as it is a precursor for adenosylcobalamin, though it is sometimes necessary to use both hydroxocobalamin and a little methylcobalamin together in some patients.

Zinc can inhibit PST. Though it is common for the chemical intolerant cohort to be zinc deficient, be careful of over-supplementing zinc. This consideration is why ScentArest does not include zinc. The polymorphism is SULTA1A.

## Prostaglandins

### Background

Prostaglandins are short-life compounds that regulate processes in every cell of your body. As a basic theme there are prostaglandins that promote inflammation (but, also play a role in repair of injury and immune response) and those that control inflammation.

Some nutrients regulate prostaglandins and some nutrients are necessary for making them in your body - mostly fats and oils - and some food contain prostaglandins. Wine, for instance, naturally contains pro-inflammatory prostaglandins (PgE2).

### Food Sources

The main way that pro-inflammatory PgE2 levels get too high is from eating a diet that has too much arachadonic acid from animal fat and linoleic acid from corn, sunflower, cottonseed and soybean oils. The high proportion of these fats and oils in the typical American diet cause high levels of PgE2 prostaglandins, systemic inflammation, pain, and degenerative diseases associated with chronic inflammation.

Long-term health promoting diets should always be mostly plant based - “eat your veggies.”

### Symptoms of Intolerance

High PgE2 levels cause inflammation, **pain**, and blood clotting and the symptoms primarily result from those effects.

Reactions to prostaglandins in wine commonly result in generalized muscle and joint pain and aching, headache, a sense of overall body heaviness, and fatigue. Ditto if you react to prostaglandins, or the precursor fats and oils, from foods.

Knowing if patients have a problem with high PgE2 levels is pretty easy - do they feel better after taking a non-steroidal anti-inflammatory drug (NSAID), even if temporarily? If the answer is yes, high PgE2 is your problem. You want to fix the cause - the patients’ diet - and provide the cofactors for promoting delta-6-desaturase (D6D) and anti-inflammatory PG1and PG3 families of prostaglandins.

NSAIDs include - Aspirin (Excedrin), Ibuprofen (Advil, Motrin), Naproxen (Aleve), Celebrex, Voltaren, Indomethacin (Indocin), Toradol, Naproxen (Anaprox, Naprosyn, Naprelan), Piroxicam (Feldene) and Tolectin.

Confirmation of Intolerance
Chronic pain-related symptoms that symptomatically improve with use of NSAIDs even if only temporarily.

Plan
Lower intake of corn, sunflower oil, cottonseed, canola (rapeseed), and soybean oils and foods made with them. Use olive and nut (i.e. walnut, almond) oils instead.

Eat more veggies and possibly less meats, eggs, and milk products. Eat more nuts and seeds and their butters, organic whole grains, and fish.

Avoid hydrogenated fats and oils - they inhibit D6D activity.

Support PG1 and PG3 production by promoting D-6-D with B3, B6, magnesium, and zinc. Again, zinc is not included in ScentArest due to the variation of need for people with chemical intolerance. The polymorphism is FADS.

## Tyramine

Background
Tyramine is a protein compound that acts as a irritant and stimulant to your nervous system. Many foods, especially fermented or aged foods, are a source of the biogenic amine, tyramine. Fermentation and aging increases tyramine levels. This is why wine is a source of tyramine.

Food Sources
Tyramine is naturally found in small amounts in protein-rich foods.

Strong or aged cheeses - aged cheddar, Swiss and parmesan, blue cheeses, Camembert.
Cured, smoked and processed meats and fish.
Pickled or fermented foods - sauerkraut, kimchee, caviar, tofu or pickles.
Fermented sauces - soy sauce, shrimp sauce, fish sauce, miso and teriyaki sauce.
Soybeans and soybean products.
Snow peas, broad beans (fava beans) and their pods.
Dried or overripe fruits, such as raisins or prunes, or overripe bananas or avocados.
Meat tenderizers or meat prepared with tenderizers.
Yeast-extract spreads (Marmite), brewer's yeast or sour dough bread.
Alcoholic beverages - beer, red wine, sherry and liqueurs.
Improperly stored foods or spoiled foods.

Environmental Sources
Tyramine is sufficiently aromatic that the smell of tyramine rich foods can trigger symptoms.

Symptoms of Intolerance
Tyramine is a powerful stimulant to that part of the nervous system that runs the fight-or-flight response.

Feeling anxious and/or over-stimulated, **headache**, nausea, vomiting, palpitations and high blood pressure.

Consistently experiencing symptoms after consuming tyramine rich foods is confirmation of tyramine intolerance.

Confirmation of Intolerance
Symptoms provoked by tyramine-rich foods by ingestion or olfaction.

Plan
Avoid the foods listed above.

Monoamine oxidase is the enzyme that metabolizes tyramine and is promoted by riboflavin. The polymorphism is MAO.

## Histamine

Background
Histamine is a stimulant neurotransmitter that plays a role in inflammation, immune response, and digestion. It dilates blood vessels and increases their permeability (cause for runny nose and watery eyes), triggers wakefulness (can cause insomnia), and stimulates release of stomach enzymes.

Food Sources
Alcohol, canned and pickled or canned foods, matured/aged cheeses, smoked meats, shellfish, legumes (beans, chickpeas, soy beans, peanuts), nuts (walnuts, cashews), cocoa (chocolate), fermented foods (fermentation by yeasts can produce histamine)*[13], vinegar.

Some foods trigger release of histamine - citrus, pineapple, plums, papaya, cocoa, nuts, legumes, tomatoes, artificial food additives (benzoate, sulfites, nitrites, MSG, food flavors and dyes).

Some foods inhibit the enzyme - diamine oxidase - that breaks down histamine - alcohol, black tea, energy drinks, green tea, and mate' tea.

Symptoms of Intolerance
Feeling over-stimulated or anxious, difficulty falling asleep, dizziness or vertigo, headaches, rapid heart beat, irregular heart beat, trouble regulating body temperature (usually feeling cold), skin rashes, stomach aches, abdominal pain, constipation and/or diarrhea, and nausea. People with histamine intolerance are often diagnosed with irritable bowel syndrome.

Confirmation of Intolerance
Experiencing histamine intolerance symptoms from ingesting histamine-rich or histamine provoking foods.

Relief from using anti-histamines.

Plan
Avoidance of histamine-rich and/or histamine provoking foods.

Support for histamine metabolizing enzymes (diamine oxidase (DAO), histamine N-methyltransferase (HNMT)). Folic acid and B6 promote both enzymes. Adenosylcobalamin - promotion is via hydroxocobalamin (B12-2000) - is a synergist for SAMe in promotion of HNMT and spares catabolism of SAMe.

Quercetin is a well-recognized modulator of mast cell degranulation of histamine. Quercetin is a component of ScentArest, but adding extra quercetin may be needed to control histamine intolerance. Use Bio-FCTS as a source of quercetin.

## Miscellaneous Industrial Chemical Compounds & Pollutants

Background
In wine, these compounds are minor residual congeners - by-products of fermentation - that are broken down in the P450 pathway. As a group we have exposure in our foods and environment.

Food and Environmental Sources
In wine, mainly fusel oils, methanol, and acetone.

In our food and environment, think of solvents, adhesives, detergents, plastics, cosmetics, household chemicals, air and water pollution, and volatile organic compounds.

Symptoms of Intolerance
Feeling “toxic”, tired, sore, achy, foggy-headed, depressed, headaches, digestive problems.

Confirmation of Intolerance
There is usually no single trigger. Exceptions are usually an easily identifiable industrial chemical or pollutant that a patient is exposed to at home or work environment (more common). Think of a painter that experiences symptoms when working with solvents, for instance.

Confirmation for intolerance to this family of chemicals tends to be non-specific. Have the patient minimize their exposure to this family of chemicals in their workplace or home (have them minimize household chemicals and put what they can’t part with in the garage or outside), eat organic and unprocessed food, and drink filtered water free of halogens (chlorine) and metals.

Plan
Counsel patient on avoidance of chemicals in their food and environment. Don’t overlook cosmetics, soaps, shampoos, conditioners, detergents, and fabric softeners. Promote cytochrome P450 enzymes via riboflavin, niacinamide, B6, folic acid, magnesium, quercetin, vitamin E, and selenium. The polymorphisms are in the CYP family.

## ScentArest Applications

### Promotion of Liver Detoxification

ScentArest promotes the cytochrome P450 pathway, sulfation, acylation, methylation, and glutathione peroxidase.

Patients in the chemical intolerant cohort are commonly genetically predisposed to low glutathione peroxidase and the inflammation that results. This influences regulation of inflammation of the intestinal wall, liver, and indeed all tissues systemically.

Metabolism of chemicals produces reactive oxygen species (ROS) that promote inflammation. This process if normally checked by glutathione peroxidase. Promotion of glutathione peroxidase is via balanced methylation, selenium and vitamin E.

### Modulation of Inflammation

Both glutathione peroxidase (GPX) and delta-6-desaturase (D6D) modulate inflammation systemically - GPX intracellularly and D6D via promotion of anti-inflammatory PG1 and PG3 families of prostaglandins.

### Environmental Intolerance/Chemical Sensitivity

Sensitivity/intolerance to environmental chemicals is primarily mediated by the same chemical agents as those found in wine. An strikingly common report among patients with wine intolerance using the ScentArest formula has been improved environmental tolerance.

### Chronic Headache

Though chronic headaches have many potential causes, chemical intolerance often ends up being the “diagnosis by exclusion” once the common and readily verifiable causes have been excluded. Tyramine is a very specific and well-researched trigger for migraine-type headaches.[14] Phenolic compounds also have been implicated.[15]

Other chemicals can trigger headaches, as well. These include the aldehydes and phenolic compounds in VOCs (volatile organic compounds), the off-gassing of aldehydes from mold, and the inflammatory effect of PGE2. More difficult to to nail down and identify are the often cumulative and compounding effects of man-made chemicals in our food and environment.

ScentArest is specifically designed to promote enzymes that metabolize these chemical compound vectors for headaches.

### Digestive Dysfunction

Dysfunctional metabolism of chemicals is a common vector for intestinal wall inflammation, increased intestinal wall permeability, digestive dysfunction, and abdominal pain. Histamine intolerance is a well researched cause for irritable bowel syndrome.[16] Impaired glutathione peroxidase has been associated with intestinal wall inflammation and increased intestinal permeability in research.[17]

## Under-Methylation

ScentArest was designed to support methylation to help promotion of chemical metabolism. It is useful as foundation for a strategy to improve up-regulation of methylation. It's gentle promotion of methylation tends to avoid the problem of over-methylation that is often seen when addressing this system.

## Phenolic Compound Intolerance

Phenolic compound intolerance is a surprisingly common triggering vector for ADD, ADHD, OCD, anxiety, insomnia, and intestinal problems. Addressing phenolic compound intolerance consistently improves symptoms and functions in people with autism.[18]

## Histamine Intolerance

ScentArest has shown consistent usefulness for people suffering from histamine intolerance. The change in signs and symptoms is often dramatic within a few days. The formula promotes diamine oxidase and histamine N-methyltransferase and modulates mast cell degranulation of histamine.

## Central Sensitivity Syndromes

Fibromyalgia Syndrome, Chronic Fatigue Syndrome, Chronic Fatigue Immunodeficiency Syndrome, Multiple Chemical Sensitivity, Toxicant Induced Loss of Tolerance, Irritable Bowel Syndrome, and Migraine Headache Syndrome are all categorized as Central Sensitivity Syndromes.[19]

These are all mediated in the central nervous system by limbic kindling and adverse effects on the ascending arousal system, autonomic nervous system, descending anti-nociceptive system, reticular activating system, and hypothalamic-pituitary-adrenal axis.

The model of limbic kindling fits very well for the signs and symptoms seen in these syndromes. It explains the commonalities between them and the variations in presentation can be accounted for in the limbic-controlled system most compromised. Chemical intolerance appears to be a vector for limbic kindling.[20]

## Clinical Considerations for Using ScentArest

Use an initial loading dose of 2-3 capsules BID for ~1 month for average adult, then titrate dosage to find minimum therapeutic dosage.

Zinc status is an important consideration for the chemical intolerant cohort. B12 is often needed. Primary support is hydroxocobalamin (B12-2000). The patient may need some complementary methylcobalamin.

Nitrogreens may be a useful complement for improving phenolic compound intolerance.

Healing reactions are usually due to up-regulated production of reactive oxygen species associated with increased chemical catabolic rate. Support GPX with vitamin E and selenium.

CoQ10 (can be a useful complement by improving mitochondrial function and controlling ROS-mediated inflammation.

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