Phenols

Phenols are chemical compounds found naturally in plant products yet are typically man-made when found in processed foods. Natural plant phenols contain protective properties and have a powerful antioxidant affect to help protect the body against free radical damage and chronic illnesses. This is the reason many health providers encourage patients to drink red wine, in moderation, or to eat grapes, cherries, and blueberries, all of which boost antioxidant activity. Antioxidants help prevent the inflammatory and degenerative diseases that currently plague millions. Conversely, synthetic phenols are often derived from benzene, coal tar, and petroleum products and have actually been banned throughout Britain and the European Union due to myriad health issues, particularly those affecting children. In fact, several British studies revealed signs of poor focus and concentration as well as considerable behavioral problems, in children consuming food with artificial phenols and the preservative sodium benzoate. Despite the health risks, synthetic phenols remain unregulated in the United States and Canada.

To make matters worse, multi-national food corporations such as Kellogg's, Betty Crocker, and Kraft manufacture two separate lines of foods—one for the United States, which include all of these chemicals, and another for their European markets which use real fruit and natural colors. Unfortunately, the explosion of fast food chains, boxed, and frozen meals and snacks has led to a five-fold increase in artificial phenol consumption over the past three decades alone. Nevertheless, in the United Kingdom, the McDonald's Corporation uses real strawberries for their strawberry sundaes while American children receive an unpronounceable list of chemicals devoid of any natural berries at all. Though many adults and children may be sensitive to natural phenols, synthetic phenol compounds appear to carry health risks ranging from hyperactivity and irritability to headaches, and in some cases, a higher risk of cancer.

Dr. Benjamin Feingold MD, a well-known pediatric allergist who studied this area in the late 1960's, was a man ahead of his time. This innovative physician discovered that many of the children he treated for asthma, eczema and food allergies also grappled with attention deficit disorder (ADD) both with and without hyperactivity (ADHD). After considerable research, Dr. Feingold discovered that after eliminating all artificial phenols as well as some of the naturally high phenol fruits and vegetables, up to 50% of the children with allergies and ADHD symptoms significantly improved. In fact, shortly after children began Dr. Feingold's Diet, both parents and teachers reported a greatly enhanced ability with schoolwork, focus and attention in addition to substantially less hyperactivity, outbursts, and tantrums. When one considers the dramatic rise in brightly colored drinks, popsicles, candies, cereals, and even yogurts, it is no wonder that ADD/ADHD and behavioral problems have become so commonplace in just the past 30 to 40 years.

In recent years, the scientific studies conducted by Dr. Rosemary Waring, PhD, revealed that many children with ADD/ADHD and autism have a deficiency in the enzyme that processes phenols, known as the PST enzyme (phenol sulfotransferase). Under normal circumstances, the average person easily metabolizes phenols and salicylates as long as there are appropriate levels of sulfates and liver enzymes. Ideally, the body utilizes what it needs from these foods and eliminates the rest through the digestive system. Since phenols and salicylates are ubiquitous in both natural and processed foods, those with leaky gut syndrome will undoubtedly have much higher levels of these chemicals, thus developing more intolerance to them. Though most children "grow out of" many of their initial symptoms of ADD/ADHD, it is now widely recognized that rather than losing the diagnosis, many of these adults simply manifest less obvious signs of this imbalance. It is also likely these adults will continue to have problems processing phenols while not recognizing that their insomnia, headaches, and irritability are

related to the foods they eat. When you consider how healthy many of these foods are known to be, it seems less likely. Why would anyone think that eating the broccoli or fruit salad at the family picnic was responsible for their sudden crankiness, flushed cheeks, or night sweats? Likewise, very few would recognize that the red sport's drink or "healthy" snack of pink, strawberry coated raisins would contribute to their inability to concentrate at work.

Although phenols and salicylates are often used interchangeably, they are not exactly the same compounds. Salicylates are only one type of phenol and scientists believe plants produce this substance as natural protection from diseases, insects, fungi, and harmful bacteria. As it turns out, salicylates are chemically very similar to the man-made chemical found in Aspirin. Many high salicylate foods also contain higher levels of phenols, but this is certainly not always the case. For instance, red grapes and raisins are very high in both compounds whereas tomatoes are not high in salicylates yet extremely high in phenols and natural glutamates. If you feel as though you need a chemistry degree in order to cook a meal or go grocery shopping these days, you are not alone. Nevertheless, it does not need to be terribly complicated if you remember that most of the time, anything that gives food vibrant color or, in the case of herbs, a more stimulating taste will have higher levels of phenols.

I know, I know, I can almost hear you groaning and mocking me with "*Wow, that's simple! We just have to give up everything that gives food a beautiful color or great taste, is that all?"* and I can't say that I blame you. However, it does not need to be an all or nothing lifestyle change. As you study this topic further, I urge you to consider the importance of balance. If you are phenol sensitive, you must remember that it is virtually impossible to remove ALL phenols and to try to do so will only drive you to the brink of insanity while introducing other problem foods as replacements. In my experience, removing entire categories of food (unless you are truly allergic) results in other unhealthy imbalances. On the other hand, if you have severe phenol intolerance symptoms then it makes sense to eliminate most of what you reasonably can. Most fruits are rich in phenols, although they can vary in content. Darker fruits contain more phenols than lighter fruits. Berries are often the worst offenders and include strawberries, cherries, raspberries, blueberries and blackberries, though fruits such as many apples, watermelon, kiwi, oranges, and grapefruit also have higher phenol levels. Some of the lower phenol fruits include pears, mangoes, and Golden Delicious Apples without the skins. When aiming for the optimal balance, consider green grapes instead of red and purple or make a fruit salad mainly comprised of the lowest phenol fruits while adding a smaller amount of berries to avoid feeling deprived.

In closing, please remember that life is short and having balance is essential. For those who love fruits and vegetables yet cannot tolerate the phenols, there are enzymes available from Houston's and Kirkman's that assist the body in breaking down these compounds. Though many people require some time to adjust to the enzymes, they are generally well tolerated and very helpful in reducing the cumulative effect of high phenol foods and supplements. Variety is truly the spice of life, particularly with regard to our diets!

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Examples of the Highest Phenol foods: **Helpful site for deciphering high vs. low phenol/salicylate foods:** http://salicylatesensitivity.com/about/food-guide/

Food dyes
Tomatoes
Apples (Fuji, granny smith, etc.)
Peanuts
Bananas
Honey
Oranges
Cocoa/Chocolate
Grapes
Colored fruits: berries, apples, watermelon, cantaloupe, etc.
Milk
Vanilla Flavor—Vanillin

The Feingold list of high phenol/salicylate foods:
Depending on your sensitivity level, avoid or limit:

- Synthetic/artificial colors and flavors, for example, FD&C colors, vanillin, BHA, BHT, and TBHQ, which are made from petroleum.
- Natural Flavoring (Contains MSG & often salicylate).
- Natural Coloring (often contain salicylate).
- Aspirin and products containing aspirin or salicylic acid, and/or salicylates.

Foods
Almonds
Apples
Apricots
Berries (all)
Cocoa/Chocolate
Cherries
Chili powder
Cider & cider vinegar (apples)
Cloves
Coffee
Cucumbers & pickles
Currants, Grapes & raisins
Nectarines
Oranges
Paprika
Peaches
Peppers (bell & chili)
Plums
Prunes
Tangerines
Tea
Tomatoes
Wine & wine vinegar (grapes)
Oil of wintergreen (methyl salicylate)

Symptoms of Phenol/Salicylate sensitivity

Those who are sensitive to phenols and/or salicylates often have nervous system over stimulation. There may be immediate indications soon after eating, however, oftentimes symptoms are delayed and transpire within a 48-hour period. These include:

*Emotional extremes, such as euphoria or "Slap Happy", followed by depression
*Dark circles under the eyes
*Red face/ears
*Diarrhea
*Headache
*Trouble falling asleep at night, night waking, and insomnia
*Fatigue and lethargy
*Irritability
*Night Sweats
*Aggression (much more common with children as well as phenols made with petroleum)
*Self-injury (head banging, hitting, or other self-injury)
*Inappropriate laughter or "Slap Happy"
*Hyperactivity is more common in children's reactions where as adults generally experience symptoms similar to chronic fatigue.

References

***You may have to copy & paste or enter the URL address of any PDF link in order to view:**
http://www.cspinet.org/new/pdf/food-dyes-rainbow-of-risks.pdf
http://www.cspinet.org/new/pdf/dyesreschbk.pdf

See the section to the right on the data regarding food dyes:
http://www.cspinet.org/fooddyes/
http://oehha.ca.gov/prop65/CRNR_notices/state_listing/data_callin/pdf/phenoldatasum.pdf

In Europe, dyed foods receive warning label
http://www.cspinet.org/new/201007201.html

The Feingold Association
http://www.feingold.org/faq.php

USDA Food Safety: Natural Flavorings on Meat & Poultry
http://www.fsis.usda.gov/Help/FAQs_Flavorings/index.asp#5

Salicylate Food Guide:
http://salicylatesensitivity.com/food-guide

Dr. Rosemary Waring, PhD:
http://www.springerlink.com/content/q830277578673619/

Abnormal Sulfation Chemistry in Autism
http://books.google.com/books?hl=en&lr=&id=zXaP2Uc39KwC&oi=fnd&pg=PA197&dq=Waring,+Rosemary+PhD+phenols&ots=9e2h_z0qha&sig=jxIT9O8JgVTq781qV3hHQKYHGdo#v=onepage&q&f=false

Sulfation Deficit
http://www.sciencedirect.com/science/article/pii/S0006322398003370