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HEROES AGAINST CANCER NEWSLETTER

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In This Issue:

Is the Air in Your Home Toxic? What to Watch Out For & Healthier Alternatives

By Ty Bollinger

We like to think of them as our private little sanctuaries away from all the chaos of life. But our homes are often hiding a dirty little secret that could be taking a serious toll on the health of our families… it's known as toxic air.

Many people don't know this, but indoor air can be up to five times more polluted than outdoor air, even if it seems like it's cleaner.[1] There are so many potential sources of air pollution inside our homes beyond what comes in from the outside that it would probably shock you. In addition to toxins like car exhaust that you'd expect to find outside, indoor air can be heavily contaminated with residues from things like cleaning sprays, air fresheners, wall paint, and even furnishings that have been treated with fire retardant chemicals.

Just because you can't *see* air toxins doesn't mean they're not there, in other words. And in many cases, there's a *lot* of them there. This is why it's so important to identify sources of air pollution inside your home, and take the proper steps necessary to mitigate them. Here's some advice that my family and I have adopted ourselves to live cleaner, healthier lives at home.

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Message From Ty Bollinger

It's officially summer and by the time this issue of the Heroes Against Cancer newsletter arrives in your mailbox, July 4th festivities (and July 1st celebrations for my Canadian friends) will have come and gone. I hope you had the opportunity to enjoy the day with loved ones, and have lots of fun and restorative leisure activities lined up for the summer.

Charlene, the kiddos, and I will be doing a bit of traveling this summer. We just got back from Bozeman, Montana, where I presented at the Red Pill Expo organized by my friend and TTAC docu-series expert G. Edward Griffin. (In case you're wondering, "Red Pill" is a reference to the movie *The Matrix* where the main character is given the option of taking a red pill that opens his eyes to the truth.)

By the way, Ed Griffin will be one of the featured speakers at our upcoming 2nd Annual Truth About Cancer Live 2017 event October 5-7th in Orlando. If you're on the fence about attending this event, just know that it *will* sell out well before October. So whether you were sad to miss it last year, or loved it and want to come back, I urge you not to wait too long to secure your tickets. Charlene, the team, and I can't wait to see you there!

In the meantime, I hope you enjoy this month's edition of your Heroes Against Cancer newsletter. The past several months I've been talking lots about different cancer therapies. My article this month is a little different, but it's something that affects every single person and is an area where your actions can make a big health impact.

Next up we're exploring how to safely use essential oils with little ones, and last but not least, explaining a common gene mutation with some serious health implications that your doctor should be checking for.

Grab a nice cold glass of filtered water, have a seat, and enjoy this July issue.

Until next month...

Ty Bollinger

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Why You Need to Avoid Air Fresheners, Candles & Cleaning Products That Contain Synthetic Scents

One of the first things I usually tell people who are concerned about air quality is this: if you use synthetic air freshening products, stop immediately. They're the first thing that many people reach for the moment things start to smell a little funky inside the house. But believe it or not, they're one of the worst contributors to indoor air pollution.

Conventional aerosol sprays, plug-ins, and even scented candles almost always contain artificial fragrances that seem as though they're just freshening stagnant air. But what they're actually doing is covering it up with toxic substances – many of which have been linked to all sorts of health problems in humans and pets.

You wouldn't necessarily know this from looking at the product packaging, though. That's because air fresheners and cleaning products aren't required by federal law to be labeled with a full and complete ingredients list.[2] What this means is that manufacturers are free to hide all sorts of questionable chemicals in their products without your knowledge.

Toxic Ingredients Commonly Found in Air Fresheners

Some of the worst offenders are the following ingredients commonly added to household air freshener products:[3]

» Fragrance

This ubiquitous term can mean a lot of different things, including that a product contains as many as *hundreds* of different chemicals that contribute to a particular scent. In the event that an air freshener even contains an ingredients list at all, if it does list "fragrance," this word will most often be listed with no explanation as to what it actually means.

This is because of a little-known regulatory loophole that allows manufacturers to legally withhold ingredient information under the guise of protecting "trade secrets."[4] So you never really know what you're breathing in when you're exposed to "fragrance" chemicals, which is why you should avoid them completely.

Household air fresheners may smell pretty, but they often contain an array of toxic, health-harming chemicals

» Phthalates

These plasticizing chemicals are often added to air fresheners to help evenly distribute and deliver fragrance chemicals throughout the room. Phthalates have been scientifically shown to interfere with hormone production, causing serious damage to the endocrine system.[5] These estrogenic chemicals are so toxic, in fact, that regular exposure to them could eventually lead to cancer.[6]

"In the past few years, researchers have linked phthalates to asthma, attention-deficit hyperactivity disorder, breast cancer, obesity and type II diabetes, low IQ, neurodevelopmental issues, behavioral issues, autism spectrum disorders, altered reproductive development and male fertility issues," reported *The Guardian* in an exposé on these noxious chemicals In 2015.[7]

The Natural Resources Defense Council (NRDC) tested 14 of the most common household air freshener products back in 2007, by the way, and found that 12 of them contained phthalates – even though *none* of them were labeled as such. The brands tested included popular brands including Air Wick, Citrus Magic, Febreze, Glad, Lysol, Oust, Ozium, and Walgreens.[8]

» Propellants and Volatile Organic Compounds (VOCs)

This class of substances is what sends air freshening chemicals out of the can or plug-in and into the air. But propellants are anything but harmless, as they fill the air with petroleum distillates such as butane and propane. These and other toxic hydrocarbons can irritate the lungs and damage the heart.

Ethanol, glycol, acetone, 1,4 dichlorobenzene, and various other volatile organic compounds (or VOCs) only add to the problem. The results of at least one survey looking at some of the most popular scented consumer products (even ones labeled as "green" or "natural") revealed that when these products are used as directed, they emit more than 100 different VOCs. This included aldehydes and deodorizers which enter the body via the lungs and wreak neurotoxic havoc.[9]

» Formaldehyde

As surprising as it might be, some air freshener products even contain rat poison, also known as formaldehyde. They technically contain the precursors to formaldehyde that become such when exposed to the air, but the effect is still the same. The International Agency for Research on Cancer (IARC), a division of the World Health Organization (WHO), classifies formaldehyde as a human carcinogen to be avoided, not willingly inhaled.[10]

The problem isn't just air fresheners, though. It's also candles, cleaning sprays, deodorizing "mists," perfumes, colognes – really anything inside your house that leaves behind a noticeable scent. There are so many unknowns as far as what's inside these products that it's simply not worth the risk. Especially if you or someone in your family already suffers from existing health problems.

Other Household Products That Contribute to Toxic Air

You also need to be careful with other common household products like wall paint, carpet, and even furniture. These products often contain questionable additives that "off-gas," meaning they release toxins into the air that you and your family end up inhaling. What makes these toxins perhaps even worse than the ones present in air fresheners and candles is that you can't always smell them.

Here are the most common offenders to watch out for:

» Wall Paint

Like air fresheners, most paint products contain VOCs – sometimes numbering in the thousands. Even long after paint has dried, VOCs can continue to silently peel off the wall and spread around your home. While most VOCs are released within the first few hours after paint has been applied, there are some that can continue to off-gas for many years.[11]

The fumes that you can smell from paint can also cause lung irritation and headaches, or worse: asthma, birth defects, damage to the central nervous system, and even cancer. According to the World Health Organization (WHO), professional painters inhale so many toxic paint fumes that they're 20 percent more likely than others to develop cancer at some point throughout their lives.[12]

Harmful VOCs in paint are released as paint dries, but can continue being released into the air for years afterwards

» Carpet

You know that "fresh" new-carpet smell? Yeah, those are chemicals tickling your sensory nerves, and they're generally pretty nasty. New carpet is loaded with a particularly toxic class of chemicals known as perfluorinated compounds, or PFCs, that, unfortunately, don't break down over time. As people who walk or lay on treated carpet are continually exposed to them, these poisons tend to build up in the blood and cause serious health damage. This is one of the reasons why I highly recommended removing carpet from your home and never getting it again.

One of the most common PFCs found in carpet is perfluorooctanoic acid, or PFOA, which numerous studies suggest may contribute to an increased risk of cancer.[13] Other risks associated with PFOA include thyroid problems, infertility, high cholesterol, and preeclampsia, a serious pregnancy complication.[14]

» Furniture

Many people never consider that their favorite couch or chair, or even their mattress, could be hurting them. But the fact of the matter is that couch cushions, mattress foam, and other modern textile materials used to make many of the things we appreciate for comfort and relaxation are loaded with the very same chemicals found in household cleaning products. Think phthalates, VOCs, PFCs, and more.[15]

Then there are the flame retardant chemicals like "chlorinated tris" that are associated with endocrine disruption and cancer. You'll commonly find these and other similar toxins in things such as couches, upholstered chairs, futons, mattresses, and even baby products like nursing pillows and portable cribs[16] – unless, of course, you stick with brands that are specifically made *without* these toxins.

A Healthier Way: Replacing Synthetic Fragrance Products With Essential Oils

If you're thinking to yourself that this is way too much to deal with, don't fret just yet. The good news is that there are many practical ways to clean up the air in your living spaces without breaking the bank.

The first and easiest thing you can do right now is to *trash every scented product you own that contains chemical ingredients like synthetic "fragrance."* This will include virtually every type of commercial air freshener, scented plug-in, laundry detergent, dryer sheet product, and perfume currently on the market.

You're probably thinking to yourself: what an incredible waste of money! I would counter that your health and the health of your family is worth far more. However, if you just can't bear to make the change all at once, another option is to replace products as you use them up with healthier alternatives. Ridding your home of toxic products is actually an investment in your future. And if you replace them with essential oil-based alternatives, you'll actually save tons of money in the long run.

If you're not already familiar with essential oils, they're basically the life blood of plants that hide deep within their fibrous bodies. They make the best fragrances

because they're completely safe and 100 percent natural. (Assuming that you're using quality oils that are extracted without the use of harsh chemicals.)

Essential oils are commonly used in aromatherapy because they contain the full essence of the plants they're made from, including their various therapeutic constituents. Modern medicine is gradually warming up to the idea that essential oils can fulfill a powerful complementary role in a variety of health applications,[17] and what they can do for the air inside your home is similarly impressive.

How to Freshen the Air With Essential Oils

It's really easy to use essential oils to freshen and purify air: just put a few drops of your favorite oils into a diffuser and vaporize to your heart's content. [Note: If you have young children or babies in your home, please see the precautions in the article on page 10.]

Here are some of the best and most powerful options for use at home, at work, in the car, and anywhere else you spend your time:

» **Lavender**. Its calming, floral notes are known to help relieve anxiety, promote relaxation, and support the nervous system.[18] But the essential oil of lavender is also a powerful deodorizing and analgesic scent that's incredibly warming to the senses.

» **Lemongrass**. A powerful disinfectant, the oil of lemongrass, which also goes by the name of calamus, is bright, citrusy, and perfect for cleansing the air.[19]

» **Tea Tree**. Also known as melaleuca, tea tree is one of the best purification oils out there. Its antibacterial, antiviral, and antifungal properties make it a great option for neutralizing unpleasant odors, as well as destroying bacteria that cause odors.[20]

» **Rosemary**. Similar in effect to tea tree, rosemary oil absolutely annihilates air pollution and harmful microbes.[21] A potent evergreen herb with a wonderfully pleasant smell, rosemary has the added effect of helping to promote improved cognition.

» **Thyme**. The antimicrobial potential of thyme is so well-established that the essential oil of this amazing immune-boosting herb is already used in some natural disinfectant sprays to kill pathogens without harsh chemicals[22] – and you can do the same thing at home by diffusing it!

» **Peppermint**. What's not to like about this invigorating herb? Pretty much nothing, as it's both powerfully freshening and deeply purifying. Breathing it in can help to relax the nasal passages and clear out mucus, while also providing relief for allergies.[23] It's also one of my favorite oils, not only for its smell, but also its versatility and potency.

Use herbs and essential oils such as mint, thyme, and rosemary to safely freshen the air in your home

» **Lemon**. There's a reason why many household cleaning products have a lemon scent (even if it's fake, which it often is): real lemon oil smells absolutely wonderful, and it helps to get rid of nasty odors. Even better, inhaling its essence can help you to detoxify

and feel rejuvenated.[24] And for when you're cleaning at home, there's almost nothing better than lemon oil to degrease and disinfect.

» **Orange**. Another citrus wonder with powerful degreasing properties, orange oil can provide comfort, relaxation, and purification wherever its scent is present.

» **Lime**. Lime oil is simply one of the most invigorating smells in existence. Besides helping to clean up the air, it can also help to clean up your body and keep it free of chemicals and other toxins that can lead to chronic disease.[25]

» **Bergamot**. A hybrid between sour orange and lemon, bergamot has an uplifting, energizing scent with powerful deodorizing properties. It also disinfects, helping to neutralize harmful bacteria and other toxins in the air and in your body.[26]

» **Clove**. The powerful scent of clove always reminds of me Christmas. But even better are the Christmastime "bugs" like those that cause colds and flu that it can help rid from the air and the respiratory passages of those breathing that air when diffused.[27]

» **Eucalyptus**. This Australian evergreen has a cool, crisp aroma that's known to help dramatically open up the airways and promote better breathing.[28] With purifying properties that closely resemble those of peppermint, eucalyptus can help to clean up the air in a room in no time.

DIY Cleaner & Air Freshener Recipes

Replacing your questionable household cleaning products with essential oil-based alternatives is a snap – and as I mentioned earlier it really can save you some serious cash over time! Try some of these recipes on for size and see what you think:

» **All-purpose spray**. Combine 5 drops of tea tree oil with 5 drops of lemon oil in a small spray bottle filled with warm water and use as needed.

» **Carpet deodorizer**. Combine 20 drops of tea tree oil with borax to make homemade carpet powder. Sprinkle evenly as needed and vacuum.

» **Floor cleaner**. Combine 10 drops of lemon oil with 5 drops of tea tree oil and mix with 2 tablespoons of unscented liquid soap to make a powerful floor-cleaning concentrate that you can easily use by mixing with water as needed.

» **Air purification**. Combine 3-4 drops each of rosemary, tea tree, and eucalyptus oils in a spray bottle filled with water and mist the air as needed.

Purifying Houseplants: Another Way to Detox Air Naturally

Growing fragrant plants inside your home is another way to take advantage of the wondrous aromas of essential oils without actually having to extract them. Botanicals such as lavender, rosemary, basil, mint, and jasmine, for instance, all emit strong bouquets that quickly and continuously fill a room with their essence. There are likewise many other common houseplants, including some with no detectable scent, that possess powerful air *detoxifying* properties.

In 1989, the National Aeronautics and Space Administration (NASA) published a report identifying a number of everyday houseplants as having unique purification properties.[29] Most people know that plants give off beneficial oxygen, but these specific plants were found to help mitigate toxins in the air such as benzene, trichloroethylene (TCE), and formaldehyde by sequestering them within their physical structures and soil. All three of these substances are known human carcinogens.

Keep in mind that the following plants are just those that NASA tested. Many houseplants have immense purifying properties, which means it's never a bad idea to fill your home and workplace with as many plants as possible to keep the air as clean and fresh as possible:

- **Gerbera Daisy** *(Gerbera jamesonii)*
  Removes TCE and benzene.
- **English Ivy** *(Hedera helix)*
  Removes TCE, benzene, and formaldehyde.
- **Marginata** *(Dracaena marginata)*
  Removes TCE, benzene, and formaldehyde.
- **Peace lily** *(Spathiphyllum "Mauna Loa")*
  Removes TCE, benzene, and formaldehyde.
- **Mother-in-law's tongue** *(Sansevieria laurentii)*
  Removes TCE, benzene, and formaldehyde.
- **Warneckei** *(Dracaena deremensis "Warneckei")*
  Removes TCE and benzene.
- **Bamboo palm** *(Chamaedorea seifritzii)*
  Removes TCE, benzene, and formaldehyde.
- **Mass cane** *(Dracaena massangeana)* – Removes TCE.
- **Janet Craig** *(Dracaena deremensis "Janet Craig")*
  Removes TCE, benzene, and formaldehyde.
- **Elephant ear philodendron** *(Philodendron domesticum)* – Removes formaldehyde.
- **Lacy tree philodendron** *(Philodendron selloum)*
  Removes formaldehyde.
- **Chinese evergreen** *(Aglonema modestum)*
  Removes benzene and formaldehyde.
- **Aloe vera** – Removes formaldehyde.
- **Golden pothos** *(Scindapsus aureus)*
  Removes TCE, benzene, and formaldehyde.
- **Green spider plant** *(Chlorophytum elatum)*
  Removes formaldehyde.
- **Heart leaf philodendron** *(Philodendron oxycardium)*
  Removes formaldehyde.
- **Banana** *(Musa oriana)* – Removes formaldehyde.
- **Ficus** *(Ficus benjamina)*
  Removes TCE, benzene, and formaldehyde.

What About Air Filtration & Purification Systems?

In conducting experiments for NASA using these plants, the scientists who identified their properties also utilized another important element for air purification: air *filtration*. Air filters are another important element in maintaining a clean environment both for work and play. If you have a forced-air heating or cooling system in your house, use high-quality filters and change them frequently to keep them working efficiently.

In addition to keeping any existing air filters in your home clean, my advice on this point would be to seek out an advanced system that utilizes activated carbon filtration, which just so happens to be the same type that NASA used in its plant experiments.

Many consumer air filters are made with only HEPA filtration technology. While this is great for trapping allergens such as dust and pet dander, by itself it isn't capable of capturing some of the more harmful air toxins such as VOCs. A filtration system that utilizes activated carbon, along with other purifying agents will provide maximum purification potential, ridding the air of many of the harmful out-gassing chemicals that I outlined earlier.

There are many options on the market. A couple of companies that manufacture this type of system include Blueair[30] and Austin,[31] who both offer a range of products to suit different needs and spaces.

Sources:

1. American Lung Association, "Everything You Need to Know About Keeping Your Home's Air Clean," *Good Housekeeping*. Retrieved from www.goodhousekeeping.com/home/g2120/indoor-air-quality-47020101/?
2. Solomon G, "Protect Your Family from the Hidden Hazards in Air Fresheners," *Natural Resources Defense Council*. Retrieved from www.nrdc.org/sites/default/files/fairfresheners.pdf
3. "Air Fresheners: What You Need to Know," *Connecticut Department of Public Health*. Retrieved from www.ct.gov/dph/lib/dph/environmental_health/eoha/pdf/air_freshener_fs.pdf

About Ty Bollinger

After losing several family members to cancer (including his mother and father), Ty Bollinger refused to accept the notion that chemotherapy, radiation, and surgery were the most effective treatments available for cancer patients. He began a quest to learn all he possibly could about alternative cancer treatments and the medical industry.

Ty has now made it his life's mission to share the most remarkable discovery he made on his quest: the vast majority of all diseases (including cancer) can be easily prevented and even cured without drugs or surgery.

Ty is a happily married husband, the father of four wonderful children, devoted Christian, best-selling author, medical researcher, talk radio host, health freedom advocate, former competitive body-builder, and also a certified public accountant.

4. "Fragrances in Cosmetics," *U.S. Food & Drug Administration.* Retrieved from www.fda.gov/cosmetics/productsingredients/ingredients/ucm388821.htm
5. Zissu A, "9 Ways to Avoid Hormone-Disrupting Chemicals." *Natural Resources Defense Council.* Retrieved from www.nrdc.org/stories/9-ways-avoid-hormone-disrupting-chemicals
6. Hsieh TH et al. "Phthalates induce proliferation and invasiveness of estrogen receptor-negative breast cancer through the AhR/HDAC6/c-Myc signaling pathway." *FASEB Journal* 2012;26(2):778-87.
7. Westervelt A, "Phthalates are everywhere, and the health risks are worrying. How bad are they really?" *The Guardian.* Retrieved from www.theguardian.com/lifeandstyle/2015/feb/10/phthalates-plastics-chemicals-research-analysis
8. Cohen A et al. "Clearing the Air: Hidden Hazards of Air Fresheners." *Natural Resources Defense Council.* Retrieved from www.nrdc.org/sites/default/files/airfresheners.pdf
9. Potera C, "INDOOR AIR QUALITY: Scented Products Emit a Bouquet of VOCs." *Environmental Health Perspectives*. Retrieved from www.ncbi.nlm.nih.gov/pmc/articles/PMC3018511/
10. "Formaldehyde." *International Agency for Research on Cancer Monographs - 100F.* Retrieved from https://monographs.iarc.fr/ENG/Monographs/vol100F/mono100F-29.pdf
11. Vila B, "Low-VOC Paint." *BobVila.com.* Retrieved from www.bobvila.com/articles/21-quick-tip-use-low-voc-paints/
12. Epstein A, "Will doing up the front room make you ill?" *The Daily Mail*. Retrieved from www.dailymail.co.uk/health/article-1327910/Paint-fumes-trigger-asthma-cancer-Hidden-dangers-decorating.html
13. Grandjean P & Clapp R, "Changing Interpretation of Human Health Risks from Perfluorinated Compounds." *Public Health Reports* 2014;129(6):482-85.
14. Main E, "Is Your Carpet Making You Sick?" *Rodale's Organic Life*. Retrieved from www.rodalesorganiclife.com/home/your-carpet-making-you-sick
15. Scutti S, "9 Toxic Chemicals Found In Furniture: Is Your Home A Hazard Zone?" *Medical Daily.* Retrieved from www.medicaldaily.com/9-toxic-chemicals-found-furniture-your-home-hazard-zone-256572
16. "EWG's Healthy Home Tips: Tip 4 - Avoid Fire Retardants." *Environmental Working Group.* Retrieved from www.ewg.org/research/healthy-home-tips/tip-4-avoid-fire-retardants
17. "Aromatherapy and Essential Oils," *PubMed Health.* Retrieved from www.ncbi.nlm.nih.gov/pubmedhealth/PMH0032518/
18. Koulivand PH et al. "Lavender and the Nervous System," *Evidence-Based Complementary and Alternative Medicine* 2013;2013:681304.
19. Thejas M et al. "Study on Disinfectant Potential of Lemon Grass Oil Against Common Pathogens," *International Journal of Advanced Research* 2016;4(7):675-79.
20. Carson CF et al. "*Melaleuca alternifolia* (Tea Tree) Oil: a Review of Antimicrobial and Other Medicinal Properties," *Clinical Microbiology Reviews* 2006;19(1):50-62.
21. Genena AK et al. "Rosemary (*Rosmarinus officinalis*) - a study of the composition, antioxidant and antimicrobial activities of extracts obtained with supercritical carbon dioxide." *Food Science and Technology* 2008;28(2).
22. Disinfecting Multi-Surface Cleaner. *Seventh Generation.* Retrieved from www.seventhgeneration.com/disinfecting-cleaner
23. Axe J, "Top 5 Essential Oils for Allergies." *Dr. Axe*. Retrieved from https://draxe.com/essential-oils-for-allergies/
24. Babar A et al. "Essential oils used in aromatherapy: A systematic review," *Asian Pacific Journal of Tropical Biomedicine* 2015;5(8):601-11.
25. Mercola J, "If You Love Lime, Try Lime Oil." *Mercola.com.* Retrieved from http://articles.mercola.com/herbal-oils/lime-oil.aspx
26. Navarra M et al. "*Citrus bergamia* essential oil: from basic research to clinical application." *Frontiers in Pharmacology* 2015;6:36.
27. Cortés-Rojas DF et al. "Clove (*Syzygium aromaticum*): a precious spice," *Asian Pacific Journal of Tropical Biomedicine* 2014;4(2):90-6.
28. Elaissi A et al. "Chemical composition of 8 *eucalyptus* species' essential oils and the evaluation of their antibacterial, antifungal and antiviral activities." *BMC Complementary & Alternative Medicine* 2012;12:81.
29. Wolverton BC et al. "Interior Landscape Plants for Indoor Air Pollution Abatement," *National Aeronautics and Space Administration.* Retrieved from https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19930073077.pdf
30. *Blueair.* Retrieved from www.blueair.com/us/air-purifiers/odors-gases
31. *Austin Air.* Retrieved from http://austinair.com/

How to Safely Use Essential Oils With Children

By Marnie Clark

As a parent, all you want for your babies and children is happiness, good health, and the ability for them to live a life without pain or suffering, right? But no matter how hard you work to keep your child healthy and well, they will inevitably experience some form of sickness from time to time. That is just part of the human experience and it can make you feel pretty helpless… especially in the middle of the night with a sick child and when you have no one available to call.

But with aromatherapy you are *not* helpless. There *is* something that you can do and it often makes all the difference. Essential oils contain the best that nature has to offer when your child gets a scrape or a bruise, has a cough, burns a hand, can't sleep, or wakes in the night with a horrible cough.

Essential oils have definitely moved into the forefront of natural medicine in recent years as more and more people recognize their wonderful ability to help our bodies heal. There is nothing new about using essential oils for healing though. From ancient times plant extracts were used for their potency and effectiveness. Aromatherapy is just the modern (and more convenient) version of the medicine man or woman who gathered herbs in the meadows and forests, using what nature had to offer when illness struck. With the rise of pharmaceutical medicine over the past hundred or so years, however, many just forgot or pushed aside the knowledge about this type of healing.

Essential oils are highly concentrated herbs or plant compounds. Because babies and children have such

small bodies and tender skin, great caution must be exercised when using essential oils on and around children. There is a lot of conflicting information out there in the world too. While some will tell you all oils are safe for children of all ages if correctly diluted, others will say nothing is safe!

So how does a concerned parent know what to do? Who do you believe? Reading all of the different books and online articles can be exhausting, time consuming, and no one can even seem to agree on which oils are safe and which are not. To help clear the confusion and save you time, the author has consulted some of the world's leading experts and research to bring you this article on how to use essential oils safely with babies and children.

Babies and Essential Oils: Proceed With Caution

Babies are so special, not only because they are so reliant upon their parents for their wellbeing, but because they make us stop and realize how precious and amazing life truly is. When using essential oils with babies, it is important to be aware that they have much more delicate and permeable skin than adults. Another factor is that their immune system and organs are not fully developed yet, so it is best not to use essential oils on or around them until after the age of three months. And even then only with great care and caution. Having stated that, many aromatherapists have clients who firmly believe that essential oils saved their newborn's lives, so oils have been used with newborns with no detrimental effects.

Robert Tisserand, one of the world's leading experts in aromatherapy, advises that "Great caution is necessary for infants. Since neonatal skin does not mature until three months of age, it is more sensitive and more permeable to essential oils. A newborn is also less equipped to deal with any adverse effects than an adult because of lower metabolic capacity, ie enzymes present in lower concentrations. These cautions apply even more to premature babies, and here it would be prudent to avoid all use of essential oils."

The reference Mr. Tisserand makes to enzymes refers to the fact that the human body relies upon the presence of enzymes to speed up the rate of virtually all of the chemical reactions that take place within cells. Babies and small children have nowhere near the number of enzymes that an adult has to help these chemical reactions take place. If they are given an adult dose of essential oils, for example, they are unable to process them quickly enough. This can result in rashes and dermatitis, headache, nausea, and even seizures, although seizures are fairly rare.

Essential oils should NOT be used on or around babies under 3 months, and used only with extreme care with older babies

A few essential oils can be more problematic than others. For instance, an oil with a high quantity of menthol (such as peppermint) given to a baby or small child has been known in a few cases to cause choking and respiratory problems. The National Association for Holistic Aromatherapy website has this warning for using peppermint with children under 30 months of age: "Direct application of peppermint oil to the nasal area or chest to infants should be avoided because of the risk of apnea, laryngeal and bronchial spasms, acute respiratory distress with cyanosis and respiratory arrest." [For more information, see the section below titled *A Cautionary Note About Peppermint, Eucalyptus, and Some Rosemary Oils*.]

All of that may sound pretty scary, but if you know how to properly dilute essential oils, which ones to avoid, and a few more tips and tricks, they can be one of the safest and most healing substances you will use with your children when they are unwell. The first thing to understand though is the importance of dilution.

Recommended Essential Oil Dilution for Babies and Children

Children respond to essential oils differently than adults. Like babies, their bodies are smaller and more sensitive to the therapeutic action of essential oils. As a result they do not require the same quantity that an adult would need. Here is the best way to go about diluting essential oils so they are safe to use with babies and children.

Choose a Carrier Oil - To dilute your essential oils, always use an organic carrier oil such as almond, coconut, avocado, jojoba, apricot kernel, or other mild, skin-friendly oil. A carrier oil is a base oil used to dilute essential oils and protect the delicate skin of children from direct contact with essential oils. This bears repeating: essential oils should not be applied "neat" (undiluted) to the skin of children and especially babies. Always mix essential oils with carrier oils immediately before applying them. At the bottom of this page is a handy dilution chart you can follow.

Essential Oils and Kids: When to Use Topically, When to Diffuse & What About Internal Use?

Topical application, diffusion, and ingestion of essential oils are all options when working with children and essential oils. However, you need to have an understanding of which method to use, and when it's safe to do so.

» **Ingestion** - Generally speaking, internal use (ingesting the oils) should be avoided with all children under the age of 12 because their concentrated potency can be neurotoxic to children.

» **Topical use** - Applying essential oils topically (to the skin) should only be done by diluting as recommended below. If the child has suffered an acute event, for instance they have been stung by a bee or bitten by a mosquito or tick, nothing beats topical use of essential oils. This should *not* be done with regularity with very young children or babies, however, because children under two can be quite sensitive to essential oils applied to the skin.

Dilution Chart

(For use with essential oils considered safe for children ~ see list on page 16)

Child's Age	Recommended Dilution
3 Months – 2 Years	1/8th of the usual adult dose – Use 8 drops of carrier oil for every 1 drop essential oil
2 Years – 6 Years	1/4th of the usual adult dose – Use 4 drops of carrier oil for every 1 drop essential oil
7 Years – 11 Years	1/2 of the usual adult dose – Use 2 drops of carrier oil for every 1 drop essential oil
12 Years and up	Dilute as for adults

» **Diffusion** - Diffusing essential oils is one of the safest ways to use essential oils with children over six months old. Only small quantities of an essential oil are diffused into the entire volume of air in a room. What must be considered when diffusing around children is the type of diffuser employed and the length of time the diffuser is operated.

[Note: For an evaluation of the different types of diffusers, see the article on The Truth About Cancer website titled: Diffusing Essential Oils 101: The Best Diffusers, How to Use Them & DIY Oil Blends.]

There are two diffuser types that are the best to use with children:

» **Ultrasonic Diffusers** - This type of diffuser is likely the very best for children. It combines essential oils with water (distilled is best) in a special receptacle. The receptacle is covered with a lid and sprays an ultra-fine oil/water mist into the air, effectively diluting the oils. For adults, many ultrasonic diffuser companies recommend using six to ten drops of essential oil with four to six ounces (118-177 ml) of distilled water. That is a good dilution for adults, especially considering the mist emitted is further diluted by the volume of air in the room where the diffuser sits.

For adults, Robert Tisserand recommends running ultrasonic diffusers for a maximum of 30 to 60 minutes, with a rest period between diffusion sessions of at least 30 to 60 minutes. He does not recommend routinely diffusing around children. However, if there is a specific need, for instance the child has a congested nose or chest due to cold or flu, diffusion with an ultrasonic diffuser can be quite helpful.

» **Nebulizer Diffusers** - Nebulizer diffusers combine an undiluted essential oil with a jet of pressurized air created by an air pump. It emits an ultra-fine mist of oil that stays suspended in the air of the room for a few hours. Typically, nebulizing diffusers blow out 8-10 drops of essential oil in a ten-minute cycle, depending on how one adjusts the output.

For adults, nebulizing diffusers can be run for ten minute cycles, using only a few drops of essential oil (this can vary between makes and models). Use caution when operating this type of diffuser around children. If you are not able to adjust how much oil is put in (for

Ultrasonic Diffuser: Dilution and Running Times for Children

Child's Age	Dilution	Diffusion Time
Six months – Age 2	2 drops essential oil in 4–6 oz (118–177 ml) of distilled water	8–10 minutes
Ages 2–6	3–4 drops essential oil in 4–6 oz (118–177 ml) of distilled water	10–15 minutes
Ages 6–11	4–5 drops essential oil in 4–6 oz (118–177 ml) of distilled water	15–20 minutes
Ages 12+	6–7 drops essential oil in 4–6 oz (118–177 ml) of distilled water	20–60 minutes

instance, some operate with the bottle of essential oil sitting upside down on a receptacle), reduce the duration of time the diffuser operates by one half to one third that for adults.

Using Hydrosols With Children

If using diluted essential oils with children makes you nervous, you might consider using a hydrosol instead. Hydrosols are very gentle yet effective and can often be just enough to kick-start the child's own healing processes.

What is a hydrosol? When essential oils are created, plant matter is steam distilled and both essential oils (the oil-soluble component), and hydrosols (the water-soluble component) are produced. In fact, much more hydrosol is created than essential oil in the distillation process. Hydrosols actually contain all of the water-soluble chemical constituents of the plant matter being distilled. Basically it is like an aromatic water. Hydrosols have a shorter shelf life than essential oils – usually only one to two years. Because they are already diluted, they generally do not need to be diluted prior to topical use in children.

A Cautionary Note About Peppermint, Eucalyptus, and Some Rosemary Oils

Because peppermint oil is such a useful oil and tends to be considered a particularly safe herb, one would think peppermint essential oil would be completely safe for use with children. For adults, both peppermint and eucalyptus are excellent for respiratory problems. However, using either of these two with children under 30 months of age is not advised.

Peppermint, eucalyptus, and certain chemotypes of rosemary contain a high quantity of menthol and/or the phytochemical 1,8-cineole. Studies have shown that menthol and 1,8-cineole can slow the respiration (breathing) rate, especially in children, which can be quite dangerous for them. For this reason, it is recommended that these oils *not* be diffused around or applied to the skin of children, except as follows.

According to Robert Tisserand, peppermint may be diffused for children age 3-6. Just proceed cautiously, using only 2 drops in an ultrasonic diffuser full of water (most contain four to six ounces or 118-177 ml of water). Because there are some conditions for which peppermint oil is extremely beneficial, for instance fever, it can also be applied topically by diluting two drops peppermint oil in four teaspoons carrier oil. If eucalyptus is the desired oil for this age group, use *eucalyptus radiata* or *eucalyptus globulus*, and just four drops in four teaspoons carrier oil.

9 Helpful Do's and Don'ts When Using Essential Oils With Children

1 | When just starting to use essential oils with your child, DO slowly introduce one essential oil at a time. No more than one oil per day. This method helps you to see which essential oils are most useful for your child, and if there are any reactions you will know exactly which one created it.

2 | DON'T give children essential oils internally because they are too concentrated. Keep in mind that one drop of essential oil is equivalent to anywhere between 15 and 40 cups of tea from the same herb. You definitely would not have your child drink that many cups of tea, so do not give them essential oils internally.

3 | DO exercise caution when you are using oils on yourself around babies six months and younger – especially the ones on the NOT safe for children list on page 16. You can safely inhale the oils directly from the bottle,

replacing the cap when you are done; that is perfectly fine. If you want to diffuse, however, just ensure you do it in a room away from your baby. Also allow time for the aroma to dissipate before bringing your baby into that room. If you or another family member need to use an essential oil topically, find a time when they can do this and be away from the baby for a little while, which allows time for the oil to dissipate. In other words, do not apply an essential oil to your skin and then immediately pick up the baby.

4 | If using essential oils topically with your child, dilute as recommended on page 12. DO keep essential oils away from eyes, nose, mouth, and ears and other sensitive areas of the body. In case of ear ache, apply diluted essential oils behind and under the ear (see the best oils to use on page 18) but never inside the ear.

5 | If using topically, DO apply *diluted* essential oils (as per chart on page 12) to the feet of children and babies. This provides some space between airways and the actual essential oil. Just then ensure that the baby does not put their feet in their mouth, and cover the feet (i.e. with socks or a sleeper with feet).

One way to use essential oils with children and babies is to dilute heavily with a carrier oil and apply to the soles of the feet

6 | Using diffusing guidelines on page 12, DO use diluted essential oils in a diffuser for acute illnesses like colds, bronchitis, or flu. However, DON'T diffuse essential oils near a child (or adult) who has a chronic respiratory disease. Asthma, for instance, can be aggravated by the constant use of diffused essential oils because they can inflame an already sensitive respiratory tract.

7 | DON'T use essential oils in teething recipes. Clove essential oil is sometimes used for this because of its numbing properties, but it is not safe for babies or children. If a baby swallows clove essential oil or any numbing agent, it can possibly numb the gag reflex, causing the baby to aspirate their own saliva.

8 | If adding essential oils to a child's bath, you need to take steps to avoid skin irritation. DO dilute the oils first in a carrier such as milk, raw honey, or Epsom salts. DON'T use carrier oils in the bath.

9 | DO keep all essential oils up and out of the reach of small children. If, however, your child drinks any part of a bottle of essential oils, DON'T induce vomiting. Call your doctor and/or poison control, and if signs of poisoning are present, then IMMEDIATELY take your child and the bottle that was consumed to the nearest hospital emergency room.

The Safest Essential Oils to Use With Children (and Oils to Avoid Using)

While this is not an exhaustive list of essential oils available on the market, these are the most common essential oils used with children. If your chosen oil is not on the list, be especially cautious and consult a certified aromatherapist or a qualified healthcare practitioner for guidance.

List of Essential Oils Generally Regarded as **SAFE** to Use With Children

Common Name (Botanical Name)
• **Blue Tansy** (*Tanacetum annuum*)
• **Carrot Seed** (*Daucus carota*)
• **Cedarwood** (*Cedrus atlantica*)
• **Chamomile, German** (*Matricaria rescutita*) **
• **Chamomile, Roman** (*Chamaemelum nobile*)
• **Cistus** (*Cistus ladanifer*)
• **Copaiba** (*Copaifera officinalis*)
• **Elemi** (*Canarium luzonicum*)
• **Eucalyptus** (*Eucalyptus radiata, Eucalyptus globulus*) *
• **Fennel** (*Foeniculum vulgare*)
• **Idaho Tansy** (*Tanacetum vulgare*)
• **Jasmine** (*Jasminum officinale*)
• **Lavender** (*Lavandula augustifolia*)
• **Ledum** (*Ledum groenlandicum*) aka Labrador tea, Greenland moss
• **Manuka** (*Leptospermum scoparium*)
• **Melissa/Lemon Balm** (*Melissa officinalis*)
• **Myrrh** (*Commiphora myrrha*)
• **Neroli** (*Citrus sinensis*)
• **Niaouli** (*Melaleuca quinquinervia*)
• **Patchouli** (*Pogostemon cablin*)
• **Peppermint** (*Mentha piperita*) *
• **Petitgrain** (*Citrus sinensis*)
• **Rose** (*Rosa damascena*)
• **Rosewood** (*Aniba rosaeodora*)
• **Sandalwood** (*Santalum spicatum, Santalum album*)
• **Valerian** (*Valeriana officinalis*)
• **Vetiver** (*Vetiveria zizanoides*)
• **Ylang ylang** (*Cananga odorata*)

** Caution: see special section on page 14 before using & always highly dilute*

*** These oils are photosensitizers. Avoid using on skin exposed to direct sunlight or UV rays.*

List of Essential Oils Generally Regarded as **NOT SAFE** to Use With Children

Common Name (Botanical Name)
• **Angelica** (*Angelica archangelica*)
• **Anise/Aniseed** (*Impinella anisum*)
• **Basil** (*Ocimum basilicum*)
• **Bergamot** (*Citrus bergamia*)
• **Birch** (*Betula lenta, Betula pendula*)
• **Black Pepper** (*Piper nigrum*)
• **Cardamom** (*Elettaria cardamomum*)
• **Cassia** (*Cinnamomum cassia, Cinnamomumaromaticum*)
• **Cinnamon Bark** (*Cinnamomum verum*)
• **Citronella** (*Cymbopogon winterianus*)
• **Clary Sage** (*Salvia sclarea*)
• **Clove** (*Szygium aromaticum*)
• **Coriander** (*Coriandrum sativum*)
• **Cumin** (*Cuminum cyminum*)
• **Cypress** (*Cupressus sempervirens*)
• **Dill** (*Anethum graveolens*)
• **Fir, Douglas** (*Pseudotsuga menziesii*)
• **Fir, Idaho Balsam** (*Abies balsamea*)
• **Fir, White** (*Abies concolor*)
• **Frankincense** (*Boswellia carteri, Boswellia frereana, Boswellia serrata, Boswellia sacra*)
• **Geranium** (*Pelargonium graveolens*)
• **Ginger** (*Zingiber officinalis*)
• **Grapefruit** (*Citrus paradisi*) **
• **Helichrysum** (*Helichrysum italicum*)
• **Hyssop** (*Hyssopus officinalis*)
• **Juniper** (*Juniperus communis*)
• **Laurel Leaf, Bay Laurel** (*Laurus nobilis*)
• **Lemon** (*Citrus limon*) **
• **Lemongrass** (*Cymbopogon flexuosus*)
• **Lime** (*Citrus aurantifolia*) **
• **Mandarin** (*Citrus reticulata*)
• **Marjoram** (*Origanum majorana*)
• **Melaleuca alternifolia** (aka Tea Tree)
• **Mountain Savory** (*Satureja montana*)

- **Myrtle** (*Myrtus communis*)
- **Ocotea** (*Ocotea quixos*)
- **Orange** (*Citrus sinensis*) **
- **Oregano** (*Origanum onites*, *Origanum vulgare*, *Origanum compactum*)
- **Palmarosa** (*Cymbopogon martinii*)
- **Palo Santo** (*Bursera graveolens*)
- **Pine** (*Pinus sylvestris*, *Tsuga canadensis*)
- **Ravintsara** (*Cinnamomum camphora*)
- **Rosalina** (*Melaleuca ericifolia*)
- **Rosemary** (*Rosmarinus officinalis* 1,8-cineole chemotype)
- **Saffron** (*Crocus sativus*)
- **Sage** (*Salvia officinalis*)
- **Spearmint** (*Mentha spicata*)
- **Spruce** (*Picea mariana*)
- **Spruce, Idaho Blue** (*Picea pungens*)
- **Tangerine** (*Citrus reticulata*) **
- **Tea Tree** (*Melaleuca alternifolia*)
- **Thyme** (*Thymus vulgaris*)
- **Tsuga** (*Tsuga canadensis*)
- **Wintergreen** (*Gaultheria fragrantissima*, *Gaultheria procumbens*)

Essential Oils and Hydrosols Commonly Recommended for Specific Conditions

While it is not recommended to use all of the essential oils listed below for a particular problem, using between one and three of the oils listed (diluted as suggested on page 12 or in a diffuser), may be beneficial for children. Be sure to follow the safety recommendations outlined above, and proceed slowly when first introducing oils to your child. Only use one essential oil per day.

» **ADD/ADHD** - vetiver, ylang ylang, patchouli, lavender, cedarwood

» **Agitated, cranky, or restless**: lavender, Roman/German chamomile, neroli, rose, vetiver, cistus, ledum, melissa, neroli, patchouli, petitgrain, valerian, vetiver

» **Allergies:** lavender, Roman/German chamomile, naiouli

» **Anxiety:** cistus, German/Roman chamomile, lavender, sandalwood, jasmine, ledum, melissa, neroli, petitgrain, rose, valerian, ylang ylang

» **Burns:** Any serious burn should always be taken to the hospital emergency room. However, if there are no blisters or black skin present, just a pink spot where the skin was burned, lavender and rose are extremely healing.

» **Colds or flu:** sandalwood, manuka, copaiba, cistus, eucalyptus radiata (highly diluted as discussed on page 14), ledum, melissa, myrrh, naiouli, rosewood

» **Cold sores:** copaiba, eucalyptus radiata (highly diluted as discussed on page 14), lavender, elemi, manuka, melissa, myrrh, naiouli, rose, rosewood, sandalwood

» **Conjunctivitis/pink eye:** Use a hydrosol as an eye wash to help soothe the redness and irritation. A hydrosol made from lavender, rose, or Roman chamomile would be excellent for this. Spray the hydrosol on a cotton wool square and gently dab the affected area.

» **Coughs, bronchitis:** lavender, German chamomile, manuka, copaiba, ledum, naiouli, eucalyptus radiata (highly diluted as discussed on page 14)

» **Cuts, scrapes, bruises, skin healing:** lavender, copaiba, elemi, manuka, vetiver

» **Diaper/nappy rash:** Spray on a hydrosol of lavender or Roman chamomile

» **Digestive problems:** Roman chamomile, fennel, highly diluted peppermint (see caution on page 14), neroli, patchouli

» **Ear aches/infections:** lavender, manuka, sandalwood, Roman/German chamomile, eucalyptus radiata (highly diluted as discussed on page 14), myrrh. Use the oils only on the outside of the ear, just behind and below the ear, NEVER in ear canal

» **Eczema:** carrot seed oil, cedarwood, German chamomile, jasmine, myrrh, patchouli, rosewood

» **Headache:** lavender, sandalwood, copaiba, Idaho tansy, valerian

» **Improve concentration:** cedarwood, elemi, jasmine, patchouli

» **Insect bites:** lavender, blue tansy, copaiba, patchouli, eucalyptus radiata (highly diluted as discussed on page 14)

» **Muscle pain:** copaiba, lavender, Roman/German chamomile, blue tansy, cistus, elemi, fennel, Idaho tansy, peppermint (highly diluted as discussed on page 14), petitgrain, vetiver, ylang ylang

» **Nausea:** lavender, fennel, patchouli, peppermint (highly diluted as discussed on page 14)

» **Sleep, calming:** Diffuse lavender in your child's bedroom 10 minutes before they go to sleep. Or use a Roman/German chamomile, valerian, vetiver, neroli or lavender hydrosol and spray their bedsheets or pillow case before bedtime.

» **Sore throat:** Diffused copaiba, sandalwood, lavender, cistus (never internally)

» **Sunburn:** lavender

» **Toothache:** Roman chamomile, myrrh (not internally - use externally on jaw where sore tooth lies)

» **Tummy ache:** lavender, copaiba, highly diluted peppermint (see caution on page 14)

About Marnie Clark

Marnie Clark has been passionately studying natural medicine since 1995 when her mother was diagnosed with breast cancer.

Marnie herself went through breast cancer in 2004 and learned how to heal using both conventional and natural medicine. She now teaches what she learned on her journey, along with patient empowerment and how to thrive during and after breast cancer using food and natural medicine.

Marnie is a natural therapist, bodyworker, aromatherapist, mother of one, and grandmother of two. You can find out more about Marnie on her website: MarnieClark.com

Even though safety is paramount, it's also important not to be afraid to use essential oils with your children. Using them as recommended, in the dilutions discussed for the appropriate age group, can be so beneficial and healing. Children love using essential oils and they seem to know innately that the beautiful aromas made from precious plant compounds are there to heal, not harm.

Sources:

"Essential Oils Desk Reference: Fifth Edition." Life Science Publishing 2011.

Tisserand R & Young R, "Essential Oil Safety: A Guide for Health Care Professionals 2nd Edition." Elsevier Canada 2013.

Wilson R, "Aromatherapy for Vibrant Health & Beauty." Avery 1995.

Worwood VA, "Aromatherapy for the Healthy Child: More Than 300 Natural, Nontoxic, and Fragrant Essential Oil Blends." New World Library 2000.

Charlene's Cancer-Fighting Kitchen

Sage Basil Parsley Pesto

Take advantage of fresh summer herbs with this tasty pesto that features powerful plant compounds silymarin, ursolic acid, piperine, and curcumin for fighting cancer stem cell production. The pesto keeps well in the fridge for several days and the flavors will blend and intensify.

Yield: 16 ounces
Preparation time: 20 minutes

For all recipes, please use fresh, organic, locally-grown ingredients whenever possible, including organic, non-irradiated spices. This will give you the maximum cancer-fighting benefits.

Ingredients:

- 1 cup fresh basil leaves, rinsed
- 1 cup fresh Italian parsley leaves, rinsed
- ¼ cup fresh sage leaves, rinsed OR 1 tablespoon dried
- ¼ cup fresh oregano leaves, rinsed OR 1 tablespoon dried
- ½ cup raw nuts: use any combination desired of walnuts, pumpkin seeds, sunflower seeds, hemp seeds, almonds, and/or pine nuts

Spices:

- 2-3 cloves garlic, peeled and crushed
- 2 teaspoons fresh turmeric root washed and chopped OR ¾ teaspoon turmeric powder
- 3 tablespoons freshly squeezed lemon juice
- ½ cup extra virgin olive oil
- ½ teaspoon pink OR sea salt to taste
- ½ teaspoon freshly ground black pepper

Directions:

1. Wash all the herbs and pat dry on a clean tea towel. This is especially important for the basil or it will turn black and taste bitter.
2. Coarsely chop all the herbs, garlic, and turmeric. Then add them to the food processor or blender. Add half the olive oil and all the lemon juice. Blend for 30 seconds.
3. Add all the remaining ingredients and continue to blend until you reach desired smoothness. You may add spring or filtered water a tablespoon at a time to assist the blending process.
4. Serve with zucchini pasta, buckwheat pasta, as a dressing for a cucumber veggie salad, or a veggie dip. Enjoy!

Better Than "Caesar" Salad

The famous Caesar salad is popular year-round, but this recipe boasts all the flavor of creamy Caesar without gluten, dairy, unhealthy oils, or sugar.

Now you can enjoy a healthy green salad rich in nutrients, antioxidants, essential fatty acids, chlorophyll, and super foods that will build up your immune system, repair damaged tissue, and fight cancer… while tasting even better than the original.

Yield: 2-4 servings
Preparation time: 20 minutes

Dressing Ingredients:

- ¼ cup plus 1 tablespoon of your favorite untoasted nut butter, tahini, or a combination of each
- 3 tablespoons freshly squeezed lemon juice
- 1 clove garlic, minced
- 1 teaspoon dried oregano
- 1 teaspoon dry nutritional yeast (optional)
- ½ teaspoon turmeric powder
- ½ teaspoon pink OR sea salt
- ¼ cup spring OR filtered water

Salad Ingredients:

- 1 cup spinach greens
- 2 cups of your favorite salad greens
- ½ small purple onion, julienned
- 1 handful of grape tomatoes
- 2 tablespoons fresh green peas
- 2 tablespoons untoasted walnuts, coarsely chopped
- Splash of extra virgin olive oil
- Freshly ground black pepper to taste

Directions:

1. Wash all the salad greens and vegetables and set aside to drain.
2. Add all the dressing ingredients to a small bowl and blend to the desired consistency, adding more water or nut butter as necessary.
3. In a large bowl, add the washed and torn or chopped salad greens, onions, and walnuts. Splash some olive oil on top and toss with a fork to coat the greens.
4. Add half of the salad dressing and toss again with a fork, coating the greens.
5. Garnish with tomatoes, peas, black pepper, and more dressing if desired. Enjoy!

Raw Watermelon, Cucumber & Strawberry Soup

This refreshing soup features three summertime favorites along with a host of cancer-fighting herbs and spices. Watermelon is an amazing fruit high in antioxidants and anti-inflammatory properties including lycopene that inhibits malignant tumor growth.

Strawberries contain fibrous tubules that attract carcinogenic heavy metals and eliminate them through the bowels. Strawberries are also a source of resveratrol, a powerful anti-cancer biochemical.

Cucumbers join the cancer-fighting all stars due to their phytonutrients - cucurbitacin and lignan - which are significant tumor development interrupters that help protect the body from estrogen-related breast, prostate, and ovarian cancers.

Yield: 4-6 servings
Preparation time: 15 minutes

Ingredients:

- 2 cups watermelon in large chunks (with the seeds)
- 1 cup cucumber, chopped but not peeled
- 1 cup fresh strawberries, hulled
- ¼ cup Goji berries
- ½ cup red onion
- 1/3 cup freshly squeezed lemon juice
- 3 tablespoons extra virgin olive oil
- 2 cups spring OR filtered water

Spices:

- 1 clove fresh garlic, crushed
- 1 inch fresh ginger root, washed well but not peeled
- 1 tablespoon fresh turmeric OR 1 teaspoon powdered turmeric
- ¾ cup fresh mint leaves
- Quality salt to taste such as pink or sea salt
- Freshly ground black pepper to taste

Directions:

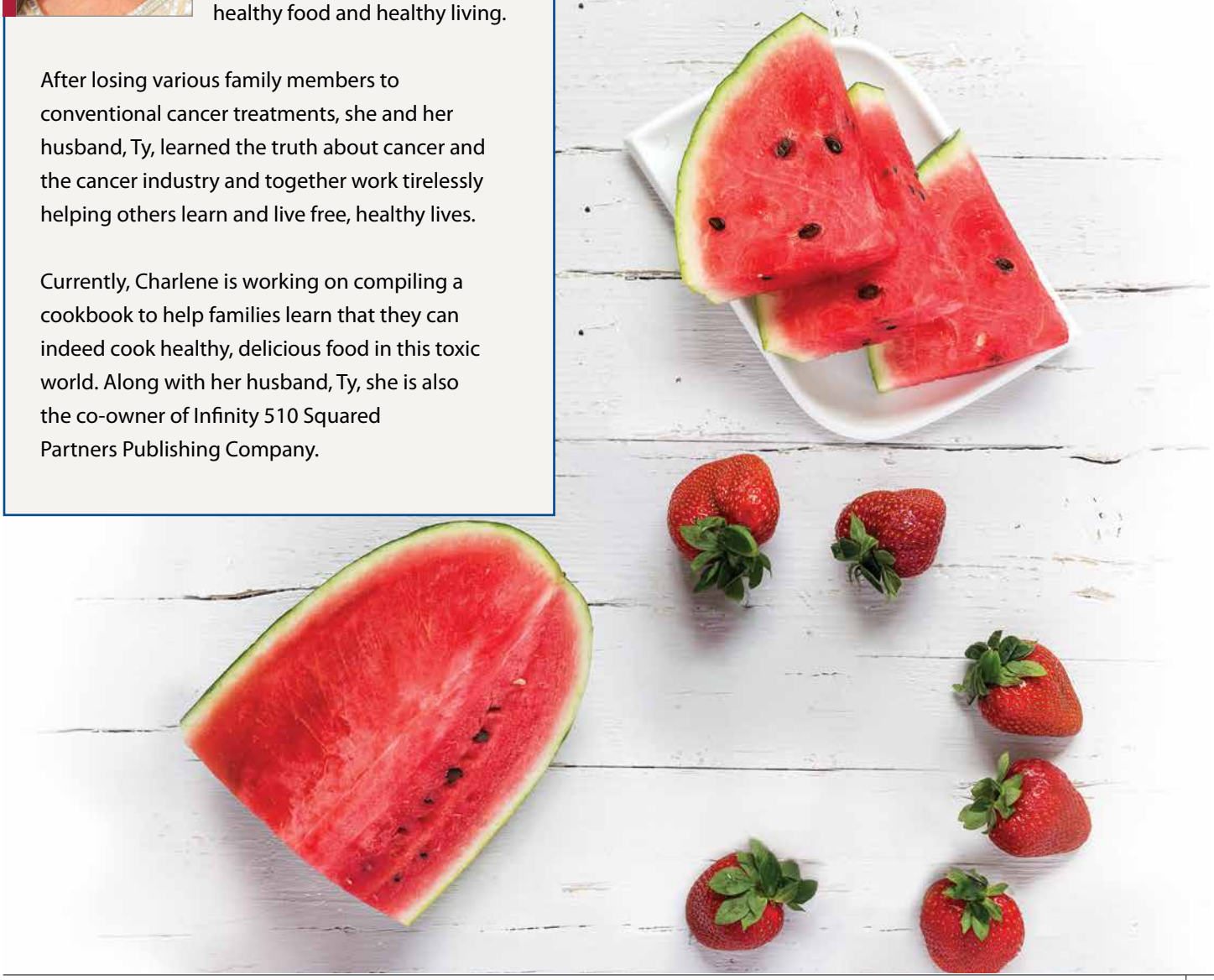
1. Cut the watermelon into large pieces, including the seeds but not the rind. The seeds are excellent detoxifiers and contain trace minerals.
2. Add all the ingredients and spices to a blender or food processor and blend/pulse until it becomes a pulp but not a smoothie. It should have small chunks in it. For a cold soup chill for two or three hours before serving.
3. Pour into serving bowls and garnish with a slice of cucumber if desired. Enjoy!

About Charlene Bollinger

Charlene Bollinger is a devoted Christian, happily married wife, joyful mother of 4 beautiful home-educated children, health freedom advocate, co-founder of CancerTruth.net, former model/actress/fitness buff, and lover of healthy food and healthy living.

After losing various family members to conventional cancer treatments, she and her husband, Ty, learned the truth about cancer and the cancer industry and together work tirelessly helping others learn and live free, healthy lives.

Currently, Charlene is working on compiling a cookbook to help families learn that they can indeed cook healthy, delicious food in this toxic world. Along with her husband, Ty, she is also the co-owner of Infinity 510 Squared Partners Publishing Company.



MTHFR: The Mutation Your Doctor Doesn't Discuss, but Should

By Elyn Jacobs

MTHFR (*methylenetetrahydrofolate reductase*) is a gene that plays a major role in your health and well-being. This gene is responsible for making the MTHFR enzyme, which is required for a metabolic process that repairs DNA, switches genes on and off, and other important activities. This enzyme also regulates the metabolism of folate (folic acid) and helps break down excess metals and toxins in the body. Folate is a key source of the one carbon group used to methylate DNA.

If the gene is mutated, the enzyme will not function properly – as much as 75 percent less efficiently. If you have an MTHFR gene mutation and it is expressed, there could be serious health consequences down the road.

Some researchers estimate that as many as two thirds of the population have mutant MTHFR. While this figure may be higher or lower, the important fact is that doctors are not routinely checking for this – even when a patient has labs that are out of range or mysterious symptoms. Heck, many docs don't even know what it is or why it's important.

An MTHFR defect can increase your risk of a variety of cancers, stroke, heart problems, depression, chemical sensitivities, migraines, and more. But, before you get overly worried about whether or not you have this mutation, know that while you cannot change your genes, you can affect the way they behave. This article will show you how.

Methylation and MTHFR

Efficient DNA methylation patterns are critical to normal genome function. [Note: a genome is the complete set of genes or genetic material present in a cell or organism.] The methylation process (conversion process) is the major biochemical pathway responsible for numerous body functions, including detoxification, immune function, mood balancing, and so much more. MTHFR gene mutations affect methylation pathways. When pathways are hindered, a myriad of chronic diseases can result.

Folate Methylation

L-methylfolate (5-MTHF) is the primary biologically active form of folic acid used at the cellular level for DNA reproduction, the cysteine cycle, and the regulation of homocysteine. However, folic acid, the cheap type of folate that you find in most vitamins and in many foods, is a synthetic form that the body cannot use unless it is converted into methylfolate. Importantly, the MTHFR enzyme is essential to convert folate and folic acid into the biologically active form methylfolate.

In the case of a mutated MTHFR gene, the mutated enzyme responsible for converting folate (folic acid) into methylfolate (which is the usable form) is impaired. This means that the mutation inhibits the body's ability to methylate, or convert, folic acid into methylfolate. This creates a health-challenging deficiency of methylfolate and can, in the presence of increased folic acid intake, also result in elevated blood concentrations of unmetabolized folic acid.

There is a plethora of research indicating that this unused folic acid could possibly build up in the body and stimulate pre-existing cancer cells, promote cancer-friendly inflammation, and reduce levels of natural killer cells that usually inhibit tumor growth.

For example, 2006 research published in *The American Journal of Clinical Nutrition* found that a high intake – generally attributable to supplemental folic acid – may increase the cancer risk in postmenopausal women. The researchers also reported that high blood concentrations of folic acid may be related to decreased natural killer cell cytotoxicity.

Another long-term study found that women who took high doses of folic acid during pregnancy were twice as likely to die from breast cancer 30 years later. Research published in 2014 in the journal *PLoS One* connected folic acid to the development and progression of breast cancer. Similar studies have linked folic acid to prostate cancer risk. Natural folate (especially from green leafy vegetables), on the other hand, has been shown to *reduce* cancer risk.

Further, when one pathway is impaired, this creates a ripple effect for other pathways. This chronic low supply of methylfolate will then affect cell processes such as those involved with methionine, homocysteine, glutathione, and SAM-e.

Homocysteine, Methionine, and Glutathione

MTHFR helps break down excess heavy metals and toxins in the body. But when it is not working correctly, these toxins are not properly eliminated. This means you could find yourself with high levels of iron, copper, lead, mercury, or uranium – all of which will negatively affect your health and raise your risk of serious health issues, including cancer.

In a nutshell, here's how it works. The MTHFR gene produces the MTHFR enzyme. From there the enzyme works with folate, breaking it down so it can convert the amino acid homocysteine into the essential amino acid methionine. If the methylation pathway is defective and thus does not properly convert homocysteine into methionine, the body's detoxification processes will be impaired.

This process of remethylating homocysteine into methionine is very important for detoxification functions. This is because homocysteine is the template for the antioxidant glutathione. Glutathione (commonly referred to as the "master antioxidant") is generated from the homocysteine/L-cysteine pathway and is involved in phase II detoxification. Because glutathione is the key neutralizer of toxins in the liver, high glutathione levels will protect the liver from the damaging effects of toxic compounds.

If you have an MTHFR mutation, the pathway for glutathione production is impaired, which means you will have much lower levels (and higher homocysteine). Given that glutathione is the master antioxidant and detoxifier in the body, in its absence one may be overly affected by emotional stress as well as by endogenous and environmental toxins. [Note: Endogenous means of internal origin, one example being estrogen.] This can lead to a multitude of symptoms, including migraines, anxiety, depression, and yes, even cancer.

AN MTHFR mutation affects glutathione production and can lead to a range of symptoms including migraines, anxiety, depression, and even cancer

As homocysteine builds up in the bloodstream, there will be less methionine. As you can see, this can be a vicious cycle. Methionine is especially important for those with estrogen dominance or breast cancer because methionine aids in the metabolism and clearance of estrogen from the liver.

Methionine also helps the body to break down histamine, serotonin, and dopamine. It also tames inflammation and helps prevent depression. What this means to you is an increased risk for depression, autoimmunity disorders, and much more.

Homocysteine also gets converted into SAM-e (S-adenosyl methionine). But if the conversion is impaired, then again, homocysteine will rise and there will be insufficient SAMe. SAMe supports over 200 critical reactions in the human body. It is anti-inflammatory, supports immune function, and helps to prevent depression, arthritis, and liver damage. Same-e is also involved in cell growth and repair.

Conversion of homocysteine to SAM-e can be optimized with the following nutrients: folate, B12, B2, zinc, TMG (trimethylglycine), and magnesium. Of course, it could also be beneficial to include supplemental SAM-e as well.

High Homocysteine Is a Red Flag

High levels of homocysteine signal a breakdown in this vital methylation process. Moreover, high levels of homocysteine may put you at risk for premature death from degenerative diseases as well as heart attack, stroke, Alzheimer's, and cancer. High homocysteine also impairs immune function, damages arteries, increases pain and inflammation, speeds up oxidation and aging, and contributes to high blood pressure.

Another potential issue involving elevated homocysteine levels is called *hypercoagulability*, which means your blood clots more easily than it should. Put simply, you *want* your body to efficiently convert homocysteine into SAMe and glutathione.

Have Your Homocysteine Levels Checked

As a general marker of overall health status, few tests carry greater predictive weight than homocysteine.

Again, a lack of methylfolate hinders the process that converts homocysteine to methionine. As a result, homocysteine builds up in the bloodstream and methionine is reduced. The metabolism of homocysteine within the body is highly dependent on vitamin-derived cofactors, and deficiencies in vitamin B12, folate, and vitamin B6 are associated with elevated homocysteine levels.

The good news is that homocysteine levels can be determined through testing, and high homocysteine levels can, in many cases, be normalized through diet and vitamin supplementation. P-5-P is the methyl version of B6 and can be helpful. However, as with B12, it's important to start with a low dosage and increase in small increments. Not everyone tolerates P-5-P well; symptoms of intolerance can be anxiety, aggressiveness, or unusual behavior.

The amount of homocysteine in your blood is one of the best objective indicators of how healthy you are and how long you are going to live. I can't stress enough how important this is. You may have to request (or even demand) this test from your doctor as it is typically not included in routine labs. If you have been tested, you will find the find the letters HCY in your lab results.

Ask your doctor about getting a blood test to check for high homocysteine levels

Steps to Reduce Homocysteine Levels

Below are some easy steps you can take right away to reduce homocysteine levels:

- Eat plenty of healthy fats such as olive oil and avocado
- Eat your vegetables, 8-10 servings daily, especially dark green vegetables
- If you consume animal products, make them grass-fed meats and dairy products, wild fish, and organic pastured eggs
- Go easy on the caffeine; limit to 2 cups a day
- Don't smoke
- Limit alcohol consumption
- Engage in stress-reducing activities daily
- Cut out salty processed foods, but do use quality Celtic or Himalayan salt as the body needs this to maximize iodine absorption
- Supplement appropriately with:
  - Folate
  - B12
  - B6
  - Zinc
  - TMG (trimethylglycine)
  - Magnesium

What Exactly Are MTHFR Mutations?

Unfortunately, MTHFR gene defects are rather complicated. Moreover, there are many different types of mutations on this gene, each with different implications.

The two primary types of mutation are the C667T and A1298C. For each of these you can be either *heterozygous* (hetero meaning "different or half"), meaning you have only one copy or half of the problem. Or you could be *homozygous* (homo meaning "the same"), which means you have two copies of the same mutation, or the whole problem. In general, the more mutations you have, the more impaired your MTHFR gene and its enzyme.

For example, you could have one copy of the 667 and one of the 1298, or two copies of one, or two copies of one and one copy of the other… you get the idea. The more mutations you have, the more your pathways are impaired.

Common Signs You Could Have MTHFR Mutations

- Cancer; especially of the breast, ovaries, colon, cervix, liver, lung, prostate, or colon
- Cardiovascular disease
- Multiple sclerosis
- Chronic inflammation
- Alzheimer's
- Diabetes
- Dementia
- Insomnia
- High blood pressure
- Brain fog
- Unexplained neuropathy
- Chronic fatigue
- Psychiatric disorders
- Addictive behaviors, such as with excessive alcohol as well as drug addiction
- Your B12 and/or folate levels are unexplainably high

Managing MTHFR Mutations

Understand that variants in methylation pathways you are born with effect genetic susceptibility to various health conditions. Methylation is involved in the way that your genes respond to environmental triggers, a response known as gene expression. The good news is that while you are born with a set of genes you cannot change, you can affect the way your genes behave. In other words, you can't change a defective gene, but you can help it do its job better and minimize problems.

Given the challenges of mutant MTHFR, it is important to minimize exposure to toxins. Limiting exposure and intake of heavy metals is imperative. Avoid pesticides, plastics, excess sugar intake, processed foods, unnecessary vaccines, toxic home and personal care products, and time spent on electronics. Do not smoke or expose yourself to second-hand smoke.

As the saying goes, "Genes load the gun, environment pulls the trigger." MTHFR has not always been a highly-expressed gene. Therefore, it is becoming increasingly clear that we are seeing more issues now due to our ever-increasing toxic environment. Here are some of the best ways to reduce your toxic load:

- Go organic with produce and animal products
- Eat only wild fish; avoid farmed
- Eliminate all artificial sweeteners
- Do not use chemical air fresheners or fabric softeners
- Use nontoxic laundry and cleaning products
- Do not use Teflon, iron, copper, or aluminum cookware. Use stainless steel or glass
- Do not use plastic wrap or plastic storage containers, especially with heat. Use glass instead
- Avoid unhealthy oils such as vegetable, canola, corn, and soybean oils
- Use low VOC and no-VOC paints and air out new mattresses and rugs before bringing them inside
- Take quality probiotic, vitamin, and mineral supplements
- Avoid treated and processed wood furniture
- Drink only filtered or spring water
- Minimize exposure to BPA and other plastic chemicals
- Avoid chemical pest-control substances; use essential oils and other non-toxic solutions instead
- Avoid birth control pills as excess hormones can clog the detox system in the liver
- Do not consume char-grilled or burned foods
- Avoid nitrous oxide (laughing gas) as it can deplete B12
- Fill your home with toxin-reducing plants

It is also important to ensure you get enough essential nutrients. Antioxidants as found in organic blueberries, blackberries, green leafy vegetables, as well as in other colorful fruits and vegetables should be consumed daily. Limit unhealthy fats such as vegetable, canola, safflower, corn, and soybean oils. Olive oil and avocado oil are much healthier choices.

If you are not consuming enough protein, your body may not be receiving enough methionine. Again, methionine is a key amino acid needed to produce your most important methyl donor, SAMe, which affects epigenetic expression (the degree to which certain genes are turned on or off). Of course, it is important to avoid excessive protein consumption in order to keep homocysteine levels down. The average person needs only about 50 grams of protein per day. Instead, concentrate on a plant-based diet loaded with vegetables and a small amount of fruit.

It can also can mean going gluten-free. However, if you do, it is often best to avoid most commercially prepared "gluten-free" foods as most are filled with undesirable ingredients. If you enjoy breads and pizzas, there are many delicious, healthy gluten-free recipes on the internet, in cookbooks, and in back issues of this newsletter. Choose naturally gluten-free foods whenever possible and avoid high glycemic, refined carbohydrates.

Gastrointestinal issues should also be addressed. Disrupted digestion can hinder nutrient absorption and unbalance gut flora which will strain the methylation process. Consuming fermented foods (e.g. sauerkraut, kefir), prebiotics, probiotics, and digestive enzymes can be helpful.

Be sure to get sufficient sleep; at least 7 hours nightly. Sleep deprivation increases the stress-reaction and depletes the adrenal glands. With proper sleep, the demand for methylation goes down. Engaging in mind-body therapies that reduce stress, such as yoga, meditation, and Reiki will also help.

To recap, there are many factors that affect methylation. The primary factors, however, appear to be emotional stress, environmental toxins, diet and nutrition, and of

A Special Note If You Are Considering Chemotherapy or MRI With Contrast Dye

Given that detoxification pathways are impaired with MTHFR mutations, you could be more sensitive to chemo toxicity, and hence might have more extreme and life-threatening side effects with these treatments.

MRIs could also post a problem as gadolinium used in some MRIs is a paramagnetic metal ion, which is known to be toxic. It was thought that it is chemically bonded with non-metal ions when used during MRIs to allow it to be eliminated from your body before it is released in your tissues.

However, recent research shows that gadolinium may not be immediately eliminated and may instead persist in your body. It is unknown at this time what the heightened risks may be, but repeated exposure to gadolinium could cause hyper-intensity in the brain which is linked to multiple sclerosis, liver dysfunction, and other adverse reactions.

Additionally, patients who have the 1298 polymorphism and are using methotrexate for their rheumatoid arthritis may require an adjusted dose, and should discuss this with their doctor.

course MTHFR (and other mutations such as COMT, which has a major influence on how we react to stress). The important thing to remember is that many of these factors are within your control.

Getting Tested for the MTHFR Mutation

You can request MTHFR DNA testing from your doctor. The formal name of the test is Methylenetetrahydrofolate Reductase Mutations, C677T and A1298C. Your doctor may suggest that you start with tests for homocysteine (HCY), B12, and folate, especially if your MCV is in range (more on that below) and they can't make a case for genetic testing to your insurance company. If you have a family history of cardiovascular disease or blood clots (thrombosis), your doctor may want to do these tests anyway.

If your doctor refuses to order the testing or if your insurance has declined coverage for the test, you can order an at-home DNA test kit called *23andMe*. Given that there are other mutations that could intensify the issues of MTHFR, this is not a bad idea. The kit costs around $200 and it is fairly complicated to make sense of, but there are some online companies that can help with that:

- **livewello** (https://livewello.com/23andMe) will translate your test results for about $20
- **Genetic Genie** (http://geneticgenie.org) will prepare a report for free, but they do ask for a donation
- **NutraHacker** (https://www.nutrahacker.com) does not interpret the results, but it does help you to clarify your nutritional needs based on the results, which can be helpful.

If you find that you are homozygous for A1298C or compound heterozygous MTHFR, then there is a high chance the mutation is being strongly passed down via your family members. For more information about MTHFR and testing, MTHFR.Net is a very informative site.

You can consume foods that are good sources of vitamin B12 and still be deficient if your body can't convert it into a usable form

B12 Deficiency and MTHFR

Another potential problem is that MTHFR mutations can cause you to be deficient in B12, an essential vitamin for the prevention of cancer. What actually happens is with a MTHFR mutation your body will have trouble converting B12 into a usable or active form. When this happens, inactive B12 can build up in your system and can inhibit the active form. Interestingly, B12 deficiency is often overlooked for this same reason. Your labs may show that you have high B12 (folate as well), but in actuality you can be dangerously deficient. About 30 percent of those with MTHFR mutations will have B12 levels that are high in the presence of a serious B12 deficiency.

If you have an unusually high B12 number on your lab reports, it would be a good idea to have your homocysteine level checked and/or be checked for MTHFR mutations. You might also consider a Methylmalonic Acid Test (MMA). This tests seems to give a much clearer picture of B12 status than an actual B12 test.

There is another number on your lab report indicative of a B12 deficiency as well. It is called the MCV (Mean Corpuscle Volume). MCV is part of the CBC (complete blood count) on your lab report. It measures the number and different types of cells in your blood – in particular, red blood cells. Large red blood cells can be caused by a B12 deficiency as well as insufficient folate intake. Incidentally, chemotherapy can also cause a high MCV level.

If your MCV is elevated, there is also a good chance you could have a condition known as *macrocytic anemia*, in which case (again) the cells are too large. When Macrocytic Anemia (also called macrocytosis) is diagnosed, it is likely that you have been B12 deficient for some time.

B12 deficiency can also be a result of poor diet (including vegan and vegetarian diets without proper supplementation), excessive alcohol consumption, or overuse of NSAIDs. It can also occur from leaky gut, *H Pylori* infection, low stomach acid, autoimmune disorders, or as a result of taking certain prescription drugs (e.g. acid reflux medications, Metformin, or Corticosteroids – inhalers, oral, and topical).

If ignored, a B12 deficiency can lead to permanent brain and nerve damage as well as various cancers. Oftentimes, B12 deficiency can be misdiagnosed as multiple sclerosis or other disorders. Common signs of a B12 deficiency include:

- Lab results for B12 being extremely high
- MCV lab results being high
- Anemia
- Dry cracked corners of the mouth
- Numbness in hands or feet
- Frequent bruising or bleeding
- Depression or moodiness
- Tinnitus (ringing in the ears)
- Tremor
- Confusion/disorientation
- Blurred vision
- Paralysis
- Impaired fine motor coordination (e.g. feeling clumsy, dropping things)
- Muscular malfunction/spasticity
- Change in taste or smell
- Weakness in the arms or legs
- Insomnia
- Chronic fatigue

What You Can Do If You Have a B12 Deficiency

If you suspect you have a B12 deficiency due to an MTHFR mutation, it is important to work with an MTHFR-literate doctor. You can't change a defective gene, but you can help it do its job better and minimize problems. And you certainly can add B12 supplementation to your protocol. While eating B12-rich foods is important, you will likely still require supplementation to compensate for the impaired pathways.

While commonly prescribed, cyanocobalamin is not a good B12 choice for people with the MTHFR mutation

What you need to know is that there are several forms of B12. Cyanocobalamin is a synthetic inactive form of B12 that it commonly prescribed as it is inexpensive, but it is not a good option if you have MTHFR mutations. Methylcobalamin (methyl B12) is a better option, as it is the most rapidly active form and is already methylated so your body doesn't have to convert it. It helps to improve the conversion of homocysteine to methionine through the methylation process. Methylcobalamin is available commercially in tablet, sublingual, and injectable formulations. (The injectable formulation of methylcobalamin is typically only available through compounding pharmacies.)

However, some people with MTHFR have trouble with methyl B12, experiencing miserable side effects (the same can also happen with 5-MTHF). If you experience

negative effects, then hydroxocobalamin (hydroxy B12) might be better for you. Another good form of B12 is adenosylcobalamin, which is converted methylcobalamin. However, adenosylcobalamin is not the most stable of formulas in pill form, so often it is offered only in liquid form.

MTHFR does not actually affect which type of B12 is necessarily best for you. There are other mutations that play a role as well. Those who also have COMT mutations (catechol-O-methyltransferase), for example, might need to limit their intake of methylated folate and consider using hydroxocobalamin, or use a combination of the three aforementioned B12 forms.

Hence, there is no one size-fits-all B12. While research points to hydroxy B12 being good for those with MTHFR mutations, it may take some time or work with your healthcare practitioner to find the best source and dosage for you.

Possible side effects or signs your B12 is not working for you:

- Mood changes such as anxiety, depression, or irritability
- Sore muscles, headaches (including migraines)
- Insomnia
- Rash or acne
- Heart palpitations or nausea
- Your blood levels of B12 remain high but you still have symptoms of B12 deficiency

Many people suffer from mysterious health conditions not realizing that some of their symptoms may in fact all be tied to an MTHFR mutation. It is important to remember that these mutations don't directly make you sick. However, they may cause an exaggerated response to a poor diet, stress, or lifestyle choices that others can seemingly "get away with."

To sum it all up, people with the MTHFR mutation are more prone to the effects of environmental and emotional toxins, resulting in nutrient deficiencies and other health challenges. However, by taking the steps outlined in this article and working with a qualified healthcare practitioner, you CAN greatly reduce the impact of MTHFR mutations.

About Elyn Jacobs

Elyn Jacobs is a breast cancer survivor and holistic cancer strategist who helps people make better, healthier, non-toxic choices. She emphasizes the critical nature of addressing the root cause of cancer and not just its symptoms, i.e the tumor.

In a caring, relaxed, and friendly manner, she helps people fast track healing by providing leading edge resources to mitigate side effects and maximize efficacy of treatment.

Elyn brings a plethora of knowledge to her practice and will help you think outside the box so you can incorporate every lifeline you may need for long term survival. Her website is ElynJacobs.com.

Sources:

Blom HJ & Smulders Y, "Overview of homocysteine and folate metabolism. With special references to cardiovascular disease and neural tube defects." *Journal of Inherited Metabolic Disease* 2011;34(1):75–81.

Celeda D, "The importance of homocysteine." *Cell Science Systems.* Retrieved from cellsciencesystems.com/education/news/the-importance-of-homocysteine/

Ellis M, "Folic acid linked to breast cancer growth in animal study." *Medical News Today.* Retrieved from www.medicalnewstoday.com/articles/271601.php

"Gene Variance Report." *LiveWello.* Retrieved from https://livewello.com/23andMe

Gervasini G & Vagace JM, "Impact of genetic polymorphisms on chemotherapy toxicity in childhood acute lymphoblastic leukemia." *Frontiers in Genetics* 2012;3:249.

Group E, "4 Must Know Facts About Adenosylcobalamin." *Global Healing Center.* Retrieved from www.globalhealingcenter.com/natural-health/adenosylcobalamin-4-facts-know/

"Methylation Analysis." *Genetic Genie.* Retrieved from http://geneticgenie.org

Miller AL, "The Methionine-Homocysteine Cycle and Its Effects on Cognitive Diseases." *Alternative Medicine Review* 2003;8(1):7-19.

MTHFR.net

"MTHFR C677T and A1298C: Explained In Plain English." *Diet vs Disease.* Retrieved from www.dietvsdisease.org/mthfr-c677t-a1298c-mutation/#What_is_MTHFR_C677T_and_MTHFR_A1298C

"MTHFR genetic mutation – what it is and how it can affect you." *Stop the Thyroid Madness.* Retrieved from stopthethyroidmadness.com/mthfr/

"MTHFR Mutation." *Lab Test Online.* Retrieved from labtestsonline.org/understanding/analytes/mthfr/tab/test/

Nutra Hacker. Retrieved from www.nutrahacker.com

Smith AD et al. "Is folic acid good for everyone?" *The American Journal of Clinical Nutrition* 2008;87(3):517-33.

Stolzenberg-Solomon RZ et al. "Folate intake, alcohol use, and postmenopausal breast cancer risk in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial." *The American Journal of Clinical Nutrition* 2006;83(4):895-904.

Troen AM et al. "Unmetabolized folic acid in plasma is associated with reduced natural killer cell cytotoxicity among postmenopausal women." *The Journal of Nutrition* 2006;136(1):189-94.

"What is the Best Form of B12?" *Methyl-Life.* Retrieved from methyl-life.com/best-form-of-b12/

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