



## Low Sulphur Trial

Curiously, some patients with problems detoxing, have processing problems on the Trans-sulphuration pathways. These may be inherited or acquired through nutritional deficit or the effects of toxicity and these problems may lead to issues with sensitivity to some sulphur compounds – especially sulphites and thiols.

The sulphur pathways are vital to the production of the essential antioxidant and natural chelating molecule glutathione – which helps to remove many toxins in the bile. For the majority of the population, high intake of sulphur rich foods is necessary for health and normal functioning. These foods include broccoli and cruciferous vegetables, alliums such as onion and garlic and eggs. This, when stopping eating these, many patients with fatigue and toxicity will feel worse.

### Who is affected?

There is a small minority of patients who actually feel better once sulphur and thiols in the diet are reduced.

Although, these patients are a tiny minority in the general population, it has been estimated that up to 1/3 of patients with heavy metal toxicity may be sensitive to thiols. This makes sense as these are individuals for whom glutathione production or utilisation is not normal – so heavy metals detox is impaired.

Another group of patients who may benefit are those who are sulphur overloaded due to excessive bacterial fermentation – particularly to ammonia or hydrogen sulphide. Many of these patients will suffer chronic constipation, bloating and severe 'brain-fog'.

The final group are those who are probably mainly sensitive to sulphites (white wine, dried fruit, foods preserved with metabisulphite). Many of these patients have issues with the SUOX pathways which help to process sulphites. Signs of this condition are asthma and wheeze with white wine / dried fruit, dark circles under the eyes and great response to molybdenum (which helps to improve sulphite processing).

### Can I test for it?

This can be very difficult to spot and there are no really reliable blood or urine tests for this condition (although the most severe cases will cause sulphur overload on organic acid screening).

Genomic testing may be more likely to show down-regulated SUOX or Up-regulated CBS variants – but these are not always reliable markers for phenotypically sensitive patients. Therefore – the short answer is No to blood tests. However, there can be tell-tale signs.

### Symptoms of thiol Sensitivity:

In terms of symptoms, I have noticed that most patients with significant thiol sensitivity (there are lots of shades of this condition), tend to be fairly fatigued or 'brain-fogged' and will tend to suffer with headache or migraines and poor peripheral circulation (due to reduced Nitric oxide production to open the blood vessels).

These are patients who will feel no better (or possibly worse), once started on an apparently 'healthy' diet full of (high sulphur), green leafy vegetables. They will often feel markedly worse with B Vitamins (especially high strength B12). Confusingly, many may also have B12 deficiency (which does present a clinical dilemma). Sources of sulphur such as Epsom salt baths (Magnesium Sulphate), may also make them feel worse.

However, given the lack of clarity for most patients (and the dramatic impact it can have in a few instances), my recommendation is that any patient not making good progress with a paleo-style diet and B vitamins, or who has marked brain-fog or objective metals toxicity should be screened with a short dietary withdrawal and challenge.



## How to do the Low Sulphur Diet trial:

### First stop all of the following supplements including:

**All methylation support** for 1 week prior (preferably 2 weeks for B12 injections). Methylation supplements include:

- B2, B12, B6 (P5P), B9 (methylfolate)
- Other B Complex Vitamins
- Trimethylglycine (TMG / betaine) – small amounts of betaine in digestive enzymes are unlikely to be an issue for most but for the purposes of the trial should also be omitted)

### Any High Sulphur supplements:

- ALA (Alpha Lipoic Acid)
- Bromelain and Papain (often in digestive enzyme supplements)
- Chlorella
- Dairy source acidophilus
- DMSO
- Collagen Powders
- MSM
- DIM / Broccoli Powder / Indole-3-Carbinol
- Cysteine / NAC
- Taurine (although is generally well tolerated as low thiol)
- Turmeric
- Epsom salts (Magnesium Sulphate)

### You may also wish to try adding the following to support efficient sulphur metabolism (optional):

- Molybdenum 400-800mcg daily as beneficial
- Glutamine and Glycine if organic acids show raised cysteine levels

### Secondly, lower dietary sulphur intake to very low levels for 4 days:

After 1 week lowering methylation and sulphur supplements you are ready to trial 4 days of low sulphur diet. We have published a brief list below and the Dr Ruscio handout is also helpful (although ignore his advice on Epsom salts)

### Thirdly, Challenge Sulphur:

After four days of avoiding them, add a small amount of high thiol foods back for 1 meal. If all is well then eat a lot of it and see what happens to your health. If you feel worse soon after introducing sulphur foods, you do not need to complete a week of sulphur challenge as it indicates you will feel better eliminating sulphur foods.

Dr Cutler's description of thiol sensitivity is as follows:

*"If you are sulphur food sensitive, you will see slow improvement over the 4 days of restriction, and then you will feel GOOD for about 2 hours after eating the thiol meal but after that there will be a crash and you will feel lousy for several days. You will feel worse and worse as you continue to eat high thiol foods in the next week and slowly better when you stop.*

*If you are not sulphur food sensitive, you will feel worse during the 4 days of restriction and consistently better whenever you add high thiol foods or supplements. If you are not sure of your reaction repeat the trial until you are sure."*

## What to do if you are sulphur sensitive:

Initially this means you are stuck with some degree of sulphur restriction – you will need to gradually work out how much can be tolerated. Obviously this is not a great long-term solution and ultimately, the best treatment for this is safe and effective detox therapy.

However, this presents a number of problems for sensitive patients due to the fact that many of the agents which help us to detox safely (glutathione, NAC, Alpha Lipoic Acid), are in themselves high sulphur. This means detox may have to be a little slow - to allow for tolerance.

Fortunately, we have noted that many patients find that dietary restrictions can be relaxed once detox therapy is underway and the best thing to do is find your own personal tolerance level through experimentation.

## Long term Low Sulphur Diet

If you are going to be stuck here then seek the advice of other low sulphur dieters online and get the 'Low Thiol Recipe Book': <https://www.amazon.co.uk/Low-Thiol-Recipes-symptoms-intolerance/dp/0648564401>

### Supplements / strategies which may help:

- **Continue probiotics and High dose Vitamin C (if tolerated and not also oxalate sensitive)** to suppress excessive bacterial growth (common in many toxic patients).
- **Treat SIBO:** If symptomatic of SIBO (bloating, gas, constipation), consider alternative treatment plans to reduce bacterial growth with Dr Sarah. Hydrogen sulphide SIBO is difficult to treat and may respond to low sulphur diet, Elemental diet or high dose oregano and Lemongrass oil therapy. Perhaps try some lemongrass tea.
- **Increase Molybdenum** as tolerated from 400 mcg up to 800mcg slowly experiencing what is tolerated for you. If you suddenly feel worse, then stop and re-start again once the issue wears off (molybdenum helps to reduce sulphur but also can increase superoxide production). Ben Lynch describes this technique as 'pulsed dosing'.
- **Arginine and Ornithine** (which support the urea cycle in metabolising ammonia), may be added, to see whether this has any effect on the sulphite and sulphate levels as measured.
- **Toxaprevent / charcoal** can be used while not formally on a detox plan, and will help to absorb excess ammonia Hydrogen sulphide and endotoxins made by the fermenting gut.
- **Grated Yucca/ cassava**, sprinkled on food also apparently helps absorb ammonia. There are organic sources available online.

### Dr Cutler's Explanation for sulphur sensitivity in Heavy Metals Toxicity:

*"About 1/3 of mercury toxic folks are sensitive to thiols (SH groups) in food and supplements. This is because mercury interferes with enzymes in the pathways involving cysteine so many end up with an excess of cysteine. When this is the case, the excess of thiols (caused by the excess cysteine), will attract mercury much more than in regular folk, and weakly drag it around making the person sicker. These people will find that they feel much better if they restrict thiols in their diet. Restricting thiols will also help them to tolerate chelation better! The only test to tell if this is applicable to you is the sulphur food elimination and challenge test.*

*There are a few of us where mercury causes a lack of sufficient cysteine. They will feel worse rather than better as the 4 day thiol fast goes on. NAC (N-Acetyl Cysteine) is recommended for them and only for them. Of course, they may eat all the high thiol food they wish."*