

Food Sensitivities and Fussy Eaters: Smell, Texture, Taste

excerpted from **Food - What's smell got to do with it?** Joan Breakey, B Sc, M App Sc, DNFS, Cert Diet, TTTC <http://members.ozemail.com.au/~breakey/>

Take-home point: (from p. 2) I developed the idea of tolerance depending on what I call the "total body load." **The total body load (TBL) included suspect food chemicals, environmental factors such as smells, contact dyes, stress and infections, and what is best described as the allergy load,** composed of whole foods and inhalants to which any family member had reacted. **The TBL adds up to threshold where adverse symptoms occur. If the TBL was down, patients reported feeling robust and ready to chance some challenge. If not, they felt fragile and hesitated about trialing anything at all.**

The sense of smell - Fussy people

Everyone thinks that his or her own ability to smell is normal, maybe with some variation. There are . . . those with a "constitution of iron" who don't notice any smells . . . On the other hand there are people . . . who are 'fussy.'

There are different sorts of 'fussy'. My friend Anna thinks the Sunday roast is 'off on Tuesday and throws it out. What a waste! Aunt Betty won't eat any bread that is one day old. She says it is stale! Lily says food really does pick up the smell of the fridge if it is not well sealed; Christie insists the smell of chlorine in water makes it undrinkable! Thomas will not drink coffee unless it is 'his' brand. He thinks this is discriminating, whereas he sees our friend's son who will only eat one brand of tomato sauce as fussy!

These are not people who would consider themselves food sensitive! Some of them are. Then there are those who are really food sensitive! They are really supersensitive to flavors in food and to all smells - much more than the general population. That's why they are often thought of as 'fussy' by others. . . .

The development of the idea that the smell of food is relevant

In my early work with hyperactive children, parents reported that, as well as suspect chemicals (artificial color, flavor, preservatives), smells, such as strong perfumes and paint caused reactions in hyperactive children. Chocolate was also an additional suspect food.

I wrote an article in 1977 on Super-sensitivity to taste, texture and temperature in which I commented that these children's sensitivity was outside the normal range, and that the children took longer to accept new tastes, textures and temperatures. At that time I also recommended excluding "anything that smells", such as glues, petrol, and bubble bath.

Bananas were allowed on the elimination diet; I learned fairly early that they were not as well tolerated fully ripe with increased smell. I was beginning to learn that it was not just the presence or absence of smell that mattered; it was the dose, and a change in the smell itself. By the 1980's it was clear that some of the population are more sensitive than others, and that my food sensitive patients were at the more sensitive end of the spectrum.

Many families reported children as being fussy. For instance, they would reject potato as moldy when it had contained the brown ring fusarium mould, even though the mother had cut a centimetre from any visible spots. They would also complain that cheese was "moldy," again, even though Mom again had cut out all visible mold plus another centimetre.

Though it seemed that flavor was important, when it came to smells, food sensitive children had views equally as strong. When asked, "How would you feel if I spilt paint or petrol on the floor?" the more hyperactive child, while rolling his eyes up to add expression, would answer, "That's nice, I like it!" The more headachy, tummy-achey child would say "that's yuk!" and give graphic depictions on how soon he would bring up his last meal! On the other hand, when I say we have to be diet detectives and not have peppermint toothpaste for a while, they often say "I think it is OK for me, I like it!"

If I ask adults how they feel when they walk through the perfume department of a big store, they each give their own response. "I feel nauseated, doesn't everybody?" they might say, or "I get a headache, doesn't everybody?" or "I sneeze, doesn't everybody?" or "My child gets hyper". From this I learned that smells do not produce the same reaction in all sensitive people. Each has their own target organ sensitivity, and the smell, along with suspect food, aggravates it.

Patients . . . are adamant that while they definitely get symptoms with some perfumes, they are sure they tolerate others. I gradually learned that liked smells are much less of a problem, but they do contribute to the overall intake contributing to their threshold for symptoms. I do not need to tell people to exclude smells they dislike, but I do need to help them reduce the many different smells that are present, with the hope that the overall reduction of suspect foods and smells may allow reintroduction of a few liked ones. There are individual differences in smells tolerated, and in dose tolerated. Many parents find it difficult to realise that the dose they can manage, even enjoy, may cause an adverse reaction in their child.

After the initial diet trial each patient conducted challenges and learned their main sensitivities. I instructed patients to smell their foods, particularly fruits, before buying. They were instructed to buy fruit that smelled mild and of good quality, and avoid fruit that smelled poor quality or in any way moldy. I remember a mother who said her food sensitive child's twin could smell a cantaloupe and was accurate in whether it would be tolerated in the ADHD twin, whereas her own hit rate was not so good! Note that now I was not only emphasising smell as a problem in its own right, but using the concept of **smell as a warning**.

During the second half of the 1980's I provided a dietetic service to Child Guidance Clinics. A Sydney dietitian, Dr Anne Swain, had provided the analysis of salicylate in foods. This provided much needed security about the chemical content of foods, and I relied less on smells. The list of incriminated chemicals from the research was increasing. By this time the basic diet excluded artificial colours, flavors, most preservatives, natural and medicinal salicylates, natural and added MSG and natural amines, in addition to chocolate.

I developed the idea of tolerance depending on what I call the "**total body load.**" **The total body load (TBL) included suspect food chemicals, environmental factors such as smells, contact dyes, stress and infections, and what is best described as the allergy load,** composed of whole foods and inhalants to which any family member had reacted. **The TBL adds up to threshold where adverse symptoms occur. If the TBL was down,**

patients reported feeling robust and ready to chance some challenge. If not, they felt fragile and hesitated about trialing anything at all.

One year there was increased reporting of children reacting to peanuts. When I found there had been an aflatoxin increase in the crop that year, I used my knowledge about molds in food to advise families to avoid peanut butter that year, and take care to not eat peanuts that smelled moldy to them.. Over time, using this advice, families reintroduced good quality peanuts and the reports of adverse reactions decreased. *(This is **not** for children with IgE peanut allergies that lead to anaphlyxis.)*

With much time and effort I followed up patient tolerance to particular trial foods. I found that most reacted to white milk-bottle-flavored lollies (lollipops) which have no colour or preservative. Most infants reacted to pediatric syrups, which I discovered contain fifteen times the dose of colour than of flavor! Twenty-five percent also reacted to the mild flavors, vanilla, carob and lemon. **I noted that diet responders were hyper-reactive as much as hyperactive, overreacting to all environmental stimuli, and that this overreaction decreased on the diet.**

On reflection, I realise that I had been orienting around the chemicals being excluded. Colours, flavors, benzoates and salicylates were grouped together as polycyclic hydrocarbons, while amines, monosodium glutamate, and most preservatives each had different structures. I used this information to highlight the possibility of individual variation in tolerance, as **I thought one group of food-sensitive people might be susceptible to one particular type of chemical structure.** This emphasized the value of having clear challenges for each of the different chemical groups.

I am not exactly sure when I had my flash of inspiration, (on the road to Damascus!) and put together the idea that **the one common factor in most excluded foods was flavor.** It is important to understand that I am **not talking about taste.** **Taste allows us to appreciate only sweetness and sourness, bitterness and saltiness. Anything else we "taste" is actually a function of smell - it is through our sense of smell that we sense flavor.** Flavor can include additive flavor, herbs, spice, teas, peppermint, acidic fruit, chocolate, aged and matured foods, sauces, and of course flavor enhancers such as MSG! What was useful in this idea was the classification - the common link between almost all the suspect substances. **All of them have a strong flavor, because all of them are aromatic compounds.** In the past, I had taken for granted smells in the environment, but now I was really **making the connection with smells in the food.** It is aromatic smells in particular. Acrid smells in onion and garlic are usually tolerated. And it does not cover all exclusions. Some preservatives are not aromatic. Artificial colour is aromatic in chemical shape but has no smell. Another separate group are the allergens, whether in food or inhalant. But the flavor concept does cover the main culprits, and **becomes more useful the more people learn to use it.**

I stopped to think about tastes. Sweet and salty tastes are tolerated. **Sour tastes are often associated with aged food and therefore amine flavors.** Bitter tastes are interesting. Patients usually do not complain about the bitter taste as much as the "strong flavor" of black tea or coffee, or soy products.

As well as the ADHD children noticing moldy smells and favorite smells, adults with IBS, headaches and migraine tend to be very sensitive to smells. I learned with them that, after they had clarified their main sensitivities via challenges, **if they smelled a marginal food**

before eating it, they could guess whether they may get away with it or not. We learned that the quality of the bouquet affected tolerance, with better quality foods being better tolerated. I encouraged people to consider what I called "the good wine factor", in that if you felt the quality was good and someone else did not, then you would tolerate that food or wine better than them. It works well!

Other workers . . . reported on foods that contained amines. These included the usual chocolate, matured cheese, aged meats, and red wine, as well as some foods I had been allowing such as canned fish, bananas, ham and bacon, browned meats, avocado and broccoli. Because I had been including many of these foods in the elimination diet without reports of reactions, I reviewed them. I found that whether they caused migraines **depended on whether the flavor development was to a point a patient found unacceptable.** Separating just ripe bananas from fully ripe bananas was good example. The same idea applied to avocados and broccoli. **I encouraged patients to use these low risk foods as long as they were very fresh, with a mild good-quality smell.** Later, after main challenges, they could trial desired foods on the basis of smell. They would decide if the Sunday roast on Tuesday was aged enough to be a problem to them. More importantly they could decide whether they could have a glass of wine. Unless they were salicylate-sensitive and couldn't eat grapes, they often could have wine!

The strength of flavor mattered too. Food sensitive patients often describe smells (that others would regard as usual/normal) as "strong", eg: a butcher's shop that smells too beefy for them, spices, and, of course, the perfume departments.

By the time I wrote my book in 1998, I was prepared to separate out the idea of **"flavor as a factor in its own right"** separate from salicylates and amines, and that foods highest in salicylates and amines are highly flavored foods. I also separated out flavors related to natural spoilage as among suspect natural chemicals to avoid.

At that time some interesting, quite unrelated, work was done on the role of taste, particularly in relation to weight management. Researchers reported on people they called **supertasters.**

Their research showed that the sense of taste is more acute in some than others. They report that flavor is composed of taste and odor, and that food likes and aversions are related to odor in food. These researchers reported that the **likes or dislikes are related to good associations** -a doting grandma's apricot pie - or **bad associations** such as being given the food while having nausea during cancer treatment. **They found that overweight people want more taste and smell. Interestingly, many flavors are usually found in fat. Diet therapy for weight control increases other flavors with non-fried food.**

One group reported that odor could affect mood. Unpleasant odors, eg: from animal feed lots, are reported to "impair mood, make people more depressed, and more anxious". The odors have an irritant effect in the nose. Receptors are in the top of the nasal cavity through a bone called the cribriform plate.

Supertasters are people to whom the taste of 6-n-propylthiouracil [PROP] is very bitter. Tasters can taste it and non-tasters do not taste it at all. This capacity is inherited.

Sweets taste sweeter to supertasters, and the bitter taste in coffee, or saccharine is more noticeable. Anatomically they have more fungiform papilla on the tongue. **They also have more enervation re pain and touch.** They feel more pain from oral irritants eg: peppers, alcohol, carbonated drinks. They are also better at perceiving fat in food.

Cancer-preventing antioxidants such as naringin in grapefruit, and isothiocyanate in the cabbage family, flavors in green tea, and soy products, are bitter. So supertasters are less likely to eat them.

Supertasters will add milk and sugar to coffee, and cheese sauces to broccoli. They will dislike hot curries and spices.

One group studied the association of taste and smell function on nutrition in ageing females. Those who could taste PROP tended to have lower body weights, lower percent fat, lower BMI, lower TG's, and lower HDL, the good cholesterol. They had lower intakes of high fat dairy products. They are thinner and healthier than others.

One researcher reports that alcohol is more irritating to the tongues of supertasters, and that it is interesting that alcoholism has been associated with non-tasting.

Some people find orange juice bitter after cleaning their teeth. After you clean your teeth with detergent your ability to taste sweet declines and things that taste sour become bitter. It wears off in 30 mins.

More Asians are tasters and supertasters. 35% female Caucasians are supertasters, only 10% of males are.

How was this work relevant to me?

It made me realise that **food sensitive patients are probably supertasters. More importantly they are "supersmellers"**! They certainly are at the sensitive end of the spectrum of taste and smell. Remember my presentation last year reporting that diet improves mood. If odors are known to increase depression and anxiety, then it makes sense that my patients who are on a low aroma diet, should be reporting better mood.

Food sensitive patients definitely notice bitter flavors more. In fact they consistently tell me how particular they are about not having strong coffee or tea. They often describe particular foods as "strong". Just as they would remark that they can't understand why people wear so much perfume. One woman complained how some women walk down the street with the perfume "streaming out behind them!" They are likely to say they don't choose meals that have lots of "strong" sauces or "strong" marinades, or "strong" spices.

Most food sensitive children are regarded as "fussy eaters". In writing this I remember that by 1990 I was describing these children as hyper-reactive as much as hyperactive. Perhaps they are justified in their overreaction to taste and smell! Where food was concerned they would clearly describe why they didn't want to try some food, "It tastes yuk!" "It smells Yuk!" "It looks

yuk!" **I taught the parents to attend to dilution of the problem taste, and they were able to gradually solve it - after they had the child on the diet and he was easier to manage.**

I found it of interest that supertasters were healthier than other people. Food sensitive families report lower rates of CHD, obesity, high blood pressure and diabetes. Is the high incidence of cancer in food sensitive families explained because cancer is simply what is left after they have survived everything else, **or because they have spent years avoiding bitter flavors that may have been preventing cancer?**

The note on toothpaste is interesting. I have to put people on a peppermint free toothpaste, so the detergent effect becomes more noticeable. Some really object to this. They may be left with a bitter flavor in their mouth.

Amines

The last phase of my journey on the role of flavor occurred when I decided to review the research on amines. One important finding was that amine content in foods varied, and varied a lot. If you had a favorite cheese, you could, with a little effort, find one paper which said that particular cheese was low in amines! [The one amine content that does not vary is phenylethylamine in chocolate!] There are amines that are developed on purpose as part of the ageing process, and there are amines which happen as part of the staling or deteriorating process, particularly in fish and pork. I think the names of these amines speak volumes about smells that people do not like ~ putrazine and cadaverine!

This research reinforced what I was finding clinically. **The stronger the flavor, either good or bad, the more likely it was to produce a bad reaction.** I am now letting people try matured cheese, as long as it smells very fresh to them and the dose is small, with success. The rule is to avoid an amine containing food if it "smells stale, of poor quality or tastes strong" to the sensitive person.

Another item of interest has to do with the metabolism of flavors. It would appear that those who are most likely to have adverse symptoms from flavors in foods are not good at metabolising them. They are reported to have bad breath, higher body and urine odor, which all decrease on diet.

Flavor in food

To enhance food we add flavor, through aging, marinades, sauces, and spice. So **to help someone limit their energy intake to control weight we encourage increased flavors so the food will be better enjoyed:** As this group is rarely food sensitive that is okay. **For food sensitive ones we decrease added flavor but do not limit energy.** This is a change (back) to the diet our Anglo-Celtic parents and grandparents used that was fairly plain fare - meat and 3 veg. This is not just limited to Anglo-Celtic diets. On questioning you hear just how fussy Italians are regarding which tomato, how ripe, must be peeled with the seeds removed and minimal spice, and Indians talk of mild curries and accompaniments with no spice.

What is the role of flavor/smell in food sensitivity?

Chemistry - most suspect chemicals are aromatic

Additives - artificial flavor, 10 X color

Salicylates - high flavor' spice, herbs, acid fruits, tea

Herbs and spices - exquisite (*I would say they can also be overpowering!*)

Amines:

Intentional: pickled products, aged meats, aged cheese, aged wine, smoked meats + chocolate which does not change over time

Unintentional: aged by becoming 'stale' especially fish and pork, smells 'moldy' especially nuts, cheese and fruit juice
- research - putrazine and cadaravarine

MSG - 'flavor enhancer'

Smells - fumes, perfume, cigarettes, petrol, glue, flowers

Consider that there are smells that are generally thought of as nice and those that are bad. Food smells too

Good smells - teas, spice, marinades etc

Bad smells - food that is bacteriologically contaminated, food that is stale

Flowers and perfumes can cause various responses. From 'strong', 'heady', 'beautiful', and 'exquisite', to overpowering for cheap perfumes or stale flowers.

Treatment is to:

1. Decrease all, including smells, and then
2. Reintroduce

Two factors emerged in what was better tolerated

1. Dose - even if there is no smell eg: colour and benzoate, the dose does still matter. As with factors with no smell, such as colour and benzoate, the dose of a smell does matter.
2. Quality of flavor - better quality bouquet is better tolerated. This is known to apply to wine and other alcoholic drinks, as poor quality and mixing drinks can result in a worse hangover. For those who are food sensitive this concept is expanded to all foods. For example cake mixes and lollies may be described as being 'sickly sweet' or having 'cheap and nasty flavor' which relates to poor quality. In fact many food sensitive children are called 'the smell' by their family as they investigate everything through smell.

Factors affecting how much smell can be a problem

Wellness - fragile versus robust

Dose - variation in the population, from "no problem" to average problem
-to highly sensitive - gourmets" noticed even in small doses

Some conclusions

There is variation in sensitivity to both taste and smell in the population.

Food sensitive people are at the sensitive end of the spectrum, so seen as fussy.

Those who think everyone else is fussy are people we regard as having a constitution of iron. There are a group in the group in the middle who are average.

Marriage between very different types is likely to be hazardous! Not to mention when the children may be even further out in either direction! The disharmony when getting them to eat vegetables is great. **Spinach is very high in amines!**

There are a group who are fairly sensitive who do not have adverse symptoms - gourmets who are discriminating about the quality of flavor of all foods - their coffee, spices, aged rump, marinades, sauces, and of course wines!

They feel good if they eat good quality food but are not addicted. They spread their flavors over all of their foods, and perfumes. Wine tasters can enjoy their flavors without having to swallow a drop!

They may feel bad if they eat something of poor quality but not have a clear symptom.

Food sensitive people are much more sensitive. Their feeling good can be getting high, and their feeling bad can be quite sick. They may have chronic or occasional symptoms typical of food sensitive people. **They may have cravings and have a happy high "what the hell anyway!" phase** followed by the headache or "hangover-type" symptoms next day. The parents of the ADHD children talk about them getting a hit with the suspect highly flavored food. Some are chronically delightful happy high types. Others are mostly touchy, want their suspect flavors but not get a high that lasts. If they dislike a strongly flavored food or meal or a particular smell they are likely to get their adverse symptoms.

When the Feingold diet became popular and people thought they should exclude foods, the UK Royal College of Psychiatrists cautioned that they may be food phobic. This was reasonable, as psychiatrists often see people who are phobic, including those who have food phobias. **However, food sensitive people are not food phobic.** They present differently and respond differently to food phobics. They are prepared to give an exclusion diet a go, but are usually very keen to reintroduce foods as much as possible. They even give themselves what they call 'treats' occasionally; despite knowing the food will cause an adverse reaction.

Smell your food - it might be making you ill!