

In A Bite with Charlotte Mei

Season 1 Episode 1 Full Transcript

CHARLOTTE: Hey there and welcome to the very first episode of In A Bite! My name is Charlotte Mei; I'm a nutritionist, presenter, and self-proclaimed food geek.

In the world we live in today, most information on nutrition and health is accessible. But unfortunately they're not always reliable, and it can get quite controversial, leaving many people confused. And this is why I started In A Bite. Through this podcast, I'll debunk nutrition myths and misconceptions. All based on the latest research. I hope for this podcast to be a source of useful information for you to use in your everyday life so we can live easier, happier days around food.

So if you like this episode or find something interesting about it, please share it on your socials and with your friends and family! Feel free to also drop me a DM on Instagram if you have suggestions for future topics!

Now let's get to it...

In this first episode we'll be kicking off with a hotly debated topic globally - Monosodium Glutamate, more commonly known as MSG. I'm addressing this because living in Asia, it's one of the few things that gets constantly spoken about, but most of us don't know if the constellations of symptoms that come with consuming MSG are really true.

Growing up I would hear the adults around me complain about headaches or palpitations after eating certain foods. And most of the time, this thing called MSG was said to be the culprit. So quite naturally, I associated MSG to something that wasn't good for you. But I always wondered if it was just an old wives' tale.

In fact, I have never really seen what MSG looks like, until a few years ago. I was having a meal at a restaurant in Hanoi while visiting my brother who was living in Vietnam at the time. Every table in this particular restaurant had a small bowl of a white condiment. Now, because the crystals looked far larger than table salt, I had the impression it was sugar and couldn't comprehend why anyone would be adding sugar into their soup! I later found out it was MSG, and quite equally couldn't comprehend why anyone would be adding it to their soup either, because in my mind, MSG was a naughty little additive that would give you uncomfortable sensations after consumption! This sparked my curiosity and so I went on to find out more about it. I wanted to know if there was any evidence to back the claims we commonly hear on the negative side effects of consuming MSG. Because frankly, I personally didn't experience them...aside from thirst - which is quite normal especially after eating a particularly salty meal.

Now before we jump right into the meat of it, just a little note to say that I'm here to provide you with the facts about MSG; not to influence you in any particular way, or to discount any experiences with it - remember, we have varying levels of sensitivities towards different foods.

Let's now have a closer look at MSG, and you can decide once and for all your take on it!

Firstly, what is MSG?

It's a seasoning and flavour enhancer. It's the purest form of umami, also known as the '5th taste'. "Umami" translates to "pleasant savoury taste", and pretty much can't be replicated by combining any other known tastes such as sweet, salty, sour, bitter. MSG gives the same taste experience as umami, and in most cases, enhances it.

It was a kitchen staple across Asia in the 30s, then was widely used in commercial food production globally; and today we see it added in foods ranging from snacks like potato chips (or crisps, depending where in the world you are listening from), seasonings, soups, spice mixes, bouillon cubes, and fast food (...yes! No wonder their fried chicken is so tasty!).

Now a little bit of the sciencey stuff.

MSG is the sodium salt of glutamate. Glutamate is one of the most common naturally-occurring amino acids. It is produced in our bodies, and is also found in many everyday high-protein foods such as meat, eggs, cheese, and plant foods like tomatoes, mushrooms, and some seaweed. In fact, glutamate can also be found in human breast milk, which happens to have 6-9 times more glutamate than cow's milk! The receptors on our tongues recognise glutamate as the umami taste - and that's why we find these foods so tasty! To come to think of it, it is no wonder burgers are so tasty - it's got meat, cheese, tomatoes, and sometimes mushrooms. Doesn't it all start to make sense now?

So sure, glutamate has been around for as long as we've been consuming these foods; but how did MSG - that odourless white crystalline powder come about? Here's where Dr Ikeda, a biochemist, comes in. He found that his wife's delicious vegetable and dried seaweed soup had a pretty meaty flavour despite not containing any. So back in 1908, he conducted a few experiments. He evaporated it and managed to extract a crystalline compound that turned out to be glutamate - which you now know has a savoury flavour. He noticed it was different to the flavours of sweet, salty, sour, bitter, and so coined it umami which is based on the Japanese word umai, which means delicious. He filed a patent for MSG, and went on to found the Ajinomoto Group in 1909, which has today become one of the leading brands of MSG. So in short, this guy pretty much invented the shortcut to enhancing the savoury umami taste in our foods!

Now how is it produced?

Today, MSG isn't extracted the way Dr Ikeda did, but it is synthesised through the fermentation of starchy ingredients such as sugar cane, sugar beets, and corn amongst others. All natural ingredients. And chemically, it consists of nothing more than glutamate,

sodium, and water. If you're wondering, both natural glutamate and monosodium glutamate are indistinguishable by the body, and they're metabolised using the same processes. And in terms of its nutrition profile, there's not much to report about it. In terms of what shows up on nutrition labels, the only notable nutrient it has is sodium. But more on that later.

I've been speaking about how glutamate-containing foods impart an umami taste, and how MSG can help enhance it. And the key word here is enhance. This is because MSG actually doesn't taste good on its own! And this is where it differs from salt. In fact, overusing MSG in a dish will give it a pretty strange flavour, and it also doesn't work well in sweet dishes. It's better off used to enhance the savouriness of a dish and give it a rounded flavour.

Okay, so now we know a little bit more about MSG. So what's the big deal about it and how did it get the reputation it has today?

Since the invention of MSG in 1909, all was going well. Until 1968 when a Dr Robert Ho Man Kwok wrote in a letter to the New England Journal of Medicine. Now, take note of these details I'm about to share. He was a man of Southern Chinese descent who had been living in the US for 8 years, and worked as a researcher at the National Biomedical Research Foundation. In this letter, he mentioned concerns around a few uncomfortable sensations he would get after eating at a Chinese restaurant in the US; and he coined the group of sensations "Chinese Restaurant Syndrome" (probably not the most culturally appropriate name!). The sensations included numbness at the back of his neck, as well as general weakness and heart palpitations, and he speculated that soy sauce, cooking wine, high salt, or MSG could be the cause for his symptoms. The same journal received 10 other letters, some even from doctors, recounting similar symptoms including headaches and heavy perspiration and having the same speculations as to the cause for it. Not taking away any of their experiences, but I wonder how much of this was influenced by confirmation bias. One of them even mentioned feeling a tightening of the face and temple muscles, numbness, weeping and even fainting! The New York Times published an article about it 6 weeks later with the headline Chinese Restaurant Syndrome Puzzles Doctors, and without any scientific studies done at this point, the media latched onto the idea of MSG causing Chinese Restaurant Syndrome, and this sent everyone into a frenzy. Cue sensationalistic journalism, biased science, and a lot of confusion amongst the Chinese restaurant owners! Talk about going viral before the age of the internet!

I managed to get hold of the New York Times article and I thought it was funny when the editor reached out to Chinese restaurant owners for a comment, and one of them responded with: the only headaches I get are from running this place and paying taxes! Quite fairly so, another owner responded asking why then were their regular customers coming back repeatedly if they were experiencing such symptoms.

Would you believe that this decades-long food controversy started with just one letter?

More on the letter at the end of the episode and trust me you'd wanna hear what actually happens.

And on the term Chinese Restaurant Syndrome, thankfully it has been more appropriately renamed to MSG Symptom Complex, so I will be using this term for the rest of this episode.

So now the question is, do any of these anecdotes hold any weight in the world of science?

We've grown so concerned over MSG without anyone really knowing the mechanisms why or whether it's truly a cause for concern. I mean, if you grew up hearing a certain messaging, you'd just believe it to be true right? I guess it didn't really help that restaurants described their food as being MSG-free, and food manufacturers display in huge lettering on their packaging that it contains NO MSG. And frankly speaking, when you see the word "NO" before something, you naturally assume it isn't any good for you.

So let's look at the scientific data collected over the years. Many studies have been conducted to test whether the consumption of MSG has adverse effects on health. They range from studies done on rats being given extremely high amounts of MSG through their food, to studies on small groups of humans fed high doses of MSG or a placebo.

With regard to MSG Symptom Complex in particular, here are a few notable studies: In 1995, the US Food and Drug Administration commissioned a study to examine the safety of MSG. They concluded that there was "no scientifically verifiable evidence of adverse effects in most individuals exposed to high levels of MSG". That said, they did however identify some short-term and generally mild symptoms that may occur in some sensitive individuals who consume at least 3g of MSG without food. Now to put that into context, a typical serving of a dish with added MSG contains less than 0.5g of MSG; and consuming more than 3g of MSG on an empty stomach is pretty unlikely.

A recent review published in 2019 in the journal of Comprehensive Reviews in Food Science and Food Safety looked at several studies testing the link between MSG and MSG Symptom Complex. These were all double-blinded, meaning neither participants nor the researchers knew which intervention the participants were receiving, and most showed no differences between subjects that were fed MSG or a placebo. As an example, one such study tested on subjects who identified themselves as having reacted negatively to MSG in the past. It's a pretty comprehensive study that tested MSG doses of 5g with and without food. Unfortunately, the results revealed inconsistencies. Firstly, despite being self-identified as being sensitive to MSG, 38% of them reacted to 5g of MSG, 13% responded to the placebo, and 14% responded to both MSG and placebo in the first round. And here they were on an empty stomach. From the subjects that reacted to the 5g of MSG, those who were eligible for the next step were retested again, and only half of them reacted the same way to the same dose. Hence, inconsistent results. The study goes on, but in general, there was no consistency in the reactions towards MSG - and we're talking about 5g of MSG taken on an empty stomach, which as I mentioned previously is unlikely in

a day-to-day situation. In the last stage of the trial, eligible test subjects were fed 5g of MSG alongside food, and here, they did not react similarly as when fed the same dose on an empty stomach. Here, we can conclude that large doses of MSG consumed without food may elicit more symptoms for those who are sensitive towards MSG. Now for those of you listening that identify similarly to the test subjects, hopefully you'd feel relieved to know that any symptoms reported during the test were mild and went away quickly.

Since some of the symptoms reported under the MSG Symptom Complex involves difficulty in breathing, the same review mentioned looked into some studies that linked MSG consumption and asthma. One of the studies that was conducted in 2012 on a large number of Chinese adults found no significant association between MSG intake and asthma. Other smaller studies from 1998 also showed no link. A few other studies looked into the association between MSG and rhinitis symptoms (so things like nasal congestion, sneezing, or an itchy nose). However, due to a lack of reliable clinical studies, no conclusions could be drawn here.

In terms of symptoms such as headaches, some studies found a significant increase in headaches, and an elevation of systolic blood pressure when given higher doses of MSG. That said, sample sizes of these studies were small, so it makes it difficult to extrapolate them to the general population. Some studies they reviewed also noted that food molecules other than MSG could be triggering the headaches. In conclusion, strong clinical evidence is lacking as many of the studies did not have strong designs.

Not to mention, the fact that the taste of MSG can be so easily picked up by the test subjects makes it tough to get completely unbiased reporting in any studies testing the effect of MSG consumption on humans!

To quote the Food and Drug Administration (FDA), "there is no evidence linking MSG food use to any serious, long-term medical problems in the general population". The Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment also published similar views in 2006.

And if you'd like to know if there are any recommendations from international health bodies in terms of safe levels to consume MSG, it's out there. This is going to be a mouthful, so bear with me. The Joint Food and Agriculture Organisation (FAO)/World Health Organisation Expert Committee on Food Additives (otherwise known as JECFA) have indicated an ADI of "not specified" for MSG. (And ADI stands for Acceptable Daily Intake). So an ADI of "not specified" essentially indicates that on the basis of available data, the ingredient, when used at levels necessary to achieve its desired effect, does not represent any health risks. The International Glutamate Technical Committee also reached the same consensus when evaluating the use of MSG in 2018.

So hopefully that irons out the MSG Symptom Complex for you.

Now another misconception about MSG is that it is high in sodium, because after all it does enhance the flavour of a food. However, an important distinction to make here is that salt imparts a salty taste to foods, however MSG enhances the savouriness, or umami, of a dish, and not necessarily its saltiness.

And believe it or not, MSG is lower in sodium compared to salt. Salt contains roughly 39% of sodium while MSG contains only 12%, which is a good third lesser. Quite a surprise given how much it can enhance the flavour of food!

If you're wondering why the concern around sodium or salt, well in short, excessive salt intake can contribute to chronic diseases such as hypertension, other heart problems, kidney disease, and osteoporosis. In fact it is one of the biggest contributors to cardiovascular disease. According to the World Health Organisation, healthy adults are recommended no more than 5g of salt a day, which is equivalent to 2000mg of sodium. Just for context, 1 teaspoon of salt weighs 6g, and this contains 2300mg of sodium; so slightly more than the recommended daily limit.

Most people consume salt for taste, so knowing that MSG contains a third the sodium of salt, it could very well be the key to reducing one's sodium intake without compromising on taste. And this is why food companies who aim to cut back on the sodium content of their foods are using MSG in their products.

So when MSG is used in place of salt in a bag of chips, the food manufacturers could be doing you a favour. To be sure, check the sodium content in the nutrition label to make sure it suits what you're looking for.

Another tip is to check and see where along the ingredients list MSG sits. Ingredients are listed in descending order of the amount used, so ideally you wouldn't want it being the first few ingredients of what you're consuming because that may indicate a high sodium food.

Also just as a side note, when food manufacturers declare MSG in their ingredients lists, they can either indicate it using its name MSG, or its food additive code number 621. So that's just something to look out for.

So rounding this up, is MSG actually bad for you?

With all that I've shared, I'll let you decide that for yourself. As science states, each of us react to MSG differently. One thing we've learnt is that consuming MSG on an empty stomach doesn't help! So for example, before having a big bowl of soup at a restaurant that you know uses MSG, have some yoghurt or a small fruit before the meal to line your tummy. And if you know you're sensitive to MSG, try to avoid it where you can. And if you do react, at least evidence suggests that these reactions are, at worst, short-term and have no lasting consequences.

And for the MSG-curious out there, if you want to give it a go at home, culinary recommendations vary. Most of them involve using MSG alongside salt, and I suppose the idea is to use slightly less salt than you usually would, and using a touch of MSG to amp up the flavours. Some say to replace a third of the salt in your recipe with MSG, while others suggest using a 10:1 ratio of salt to MSG. So it varies quite a fair bit. I've not tried them out, so I'm not much help here, but I'd say to maybe stick to a more conservative amount to begin with, and slowly work upwards to see what works best for your preferences! Use it in most of your savoury dishes like soups, stews, stir-frys, eggs, etc, adding it at the same time you would salt, but never use it in your baking - stick to salt for that!

As for me personally, I've known in the past couple of years that MSG is safe for consumption and have felt alright eating it, though if I had to choose between two food items, I would still go for the one that doesn't have MSG. But the only exception I'd make is for mayonnaise - nothing beats Kewpie mayo! After all, David Chang did say that Kewpie mayo is the best in the world because it contains MSG. But anyway, back to the point - now that I've truly gotten my head into the research papers and have read more about it from a culinary point of view, instead of making my decision based on whether or not the food item contains MSG, I'd look at the sodium levels instead, because that's what matters more to me.

As someone who cooks, I'm a little torn. As I'm sitting here recording this episode, I'm legitimately making a mental note to get some MSG so I can try adding it to some of my dishes. At the same time, I don't like the idea of using MSG in my cooking because I want to know that the food is flavourful because of the amazing ingredients and wonderful cooking skills of the chef! But y'know what, MSG will go a longer way in the kitchen than my pride would. Put it this way - I'm open to experimenting and using it in some dishes where I want an extra something, but I probably won't use it very often as I still like my foods tasting as they naturally do.

And if I had one concern as a nutritionist around MSG, it would be whether or not it would create an overreliance on the complex umami flavour it gives foods, such that when a food doesn't contain MSG, one might feel as though something was missing, and they would end up adding salt just to achieve a stronger flavour, thereby increasing their sodium intake.

Now after all that, let's go back to where we left off earlier with the letter by Dr Robert Ho Man Kwok... Remember how I said there was more to it?

Well, it was all a hoax. Kinda. Sources say they think it is but they're not entirely sure. I'm not sure. No one is sure!

Here's what went down according to the producers at This American Life, a public radio programme in the US, in an episode that aired in February 2019.

In 2018, an orthopaedic surgeon named Howard Steel came forward saying that he was the one who wrote the letter Chinese Restaurant Syndrome, and that he had made up the name Dr Robert Ho Man Kwok which was meant to be a play on the phrase (human crock of sh*t). He had made up this identity, including the fact that he was a researcher at the National Biomedical Research Foundation! He wrote the letter back then as a bet between another friend of his that said it would be impossible for an orthopaedic surgeon to have an article published in something as prestigious as the New England Journal of Medicine. It was meant to be a joke. In an interview, he said that after the article was published, he had written to the editor of the journal saying that it was all fake, but the editor wasn't having any of it and blocked off all his calls.

Now it doesn't end there. The reporter who interviewed Howard Steel later found out in his own research that the National Biomedical Research Foundation which Howard said he had made up actually exists, and that they did, at one point, have a researcher named Dr Robert Ho Man Kwok. And this was also in the 60s. Coincidence, or not? It also seemed odd that - if the letter was really fake - the real Dr Ho Man Kwok nor his institution said anything about it.

At this point of the research, it was almost impossible to set the record straight on what really happened because Howard Steel, along with the friend he made the bet with, and Robert Ho Man Kwok had all passed away. Isn't this story just nuts!

Thankfully, both Howard and Robert have children, so the reporters reached out to them, as well as a supposed colleague of Robert at the research foundation. Robert's kids and colleague affirmed that he did write the letter. It also makes sense when comparing the information in the letter about him having moved to the US 8 years prior, which he really did.

So now we're left with two possibilities - one that has been telling a lie for decades about him having written a letter that sparked a global frenzy over one food ingredient, and the other that someone had innocently written a letter with genuine concern but ended up having someone making up a story about having written it instead... Does this even make sense? If you're confused, you're not alone.

Finally, the producer of the show This American Life made a call to Howard Steel's daughter, Anna Steel; who grew up knowing that her father had written this letter. After hearing that there was a Dr Robert Ho Man Kwok, and whose children and colleague had confirmed to be the author of the letter, Anna immediately understood it all and said that her father, who was always somewhat of a jokester, was probably playing a prank. He played a prank saying that he had written the letter, and claimed credit for everything that had unfolded, though he had nothing to do with it. Talk about fake news on the front of MSG, but also on how it all began!

Who would've guessed...

Now that brings us to the end of the episode, and I sure hope you've learnt something new. If there's anything I want you to take away from this episode, aside from this mystery of a story, it's that MSG is safe and perfectly alright to use in food to boost flavour. And we have the science to prove it.

I hope you now have a better understanding of the ingredient, have had your questions answered, and now have a better ability to exercise more awareness of the flavours in your foods. After all, we're here to understand our food, how it interacts with our bodies, and to build a closer relationship with the food we eat!

Thank you for listening to the very first episode of In A Bite! I will be dedicating time for Q&A on each episode, so if you have any questions about anything I spoke about, do drop me a DM on Instagram or email me at hello@thecharlottemei.com and I'll be answering them in the next episode!

If you want to read more about the papers I referenced, you can head over to my website to check out the show notes.

And to keep up with future topics, subscribe to the channel, and follow me on Facebook, Instagram, and TikTok: @thecharlottemei. Feel free to also write in if you have any topics you'd want me to cover next!

If you're curious about Intermittent Fasting and what it's all about, tune in to the next episode to hear more!