

But Why: A Podcast for Curious Kids

[Why Do Cookies Taste Better With Salt? And Other Cooking Questions](#)

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[Jane] *This is But Why: A Podcast for Curious Kids* from Vermont Public Radio. I'm Jane Lindholm. On this podcast, we take questions from kids just like you all over the world and we find answers.

This week we're talking about cooking, baking and food.

[Child] Why are marshmallows soft?

[Child] Why do we need salt to make sweet cookies?

[Child] How do they know when to put expiration dates on food?

[Jane] Get ready to join us in the kitchen for answers to some of your cooking questions. And we're joined by the host of a new podcast.

[Molly] My name is Molly Birnbaum and I am the editor-in-chief of America's Test Kitchen Kids and host of the *Mystery Recipe* podcast.

[Jane] A lot of kids probably know your podcast. But for those who haven't heard it yet, what can you tell us about *Mystery Recipe*?

[Molly] So *Mystery Recipe* is a podcast for kids and their grown-ups to listen to. Every week we cover a different ingredient. And then at the end of the season, we use all of those ingredients to cook a mystery recipe together. So throughout the whole season, we want people to guess what the final recipe is going to be. And throughout that time, we get to meet a lot of fun, fictional and nonfictional characters and learn a ton about the science behind food.

[Jane] In this first season of *Mystery Recipe*, they're talking a lot about ingredients like onions, parmesan cheese and salt as they work their way to their final recipe. Do you have any ideas of what you think it might be? Well, it just so happens that a lot of you have sent us questions about salt, too, so we thought we'd get Molly's help.

Here's a question from Maya.

[Maya] I'm eight years old and I'm from Washington, D.C. And my question is, why did things taste better with salt?

[Molly] That's a great question and really a fundamental question for almost anything that we eat, because almost every recipe contains a little bit of salt. Right? So that's such a smart thing to ask. Why does everything need that tiny bit of salt? And I think actually the answer to why salt tastes good is the same reason as why sugar tastes good, which is that we humans, like all animals, require it for life. Salt is actually something that you need in your body to be alive. And so, we have evolved to crave it and seek it out. So we really like to have salt in all of our food because it is something that we need for survival.

[Jane] Things taste better with salt, partly because we crave it. But what does salt actually do to food to enhance the flavor?

[Molly] So I think one interesting thing to know before really diving into salt is what is flavor? And flavor is in part taste. And so, you have five different taste sensations that you perceive on the taste buds in your mouth and in your tongue, salty, sweet, bitter, sour and umami, the rest of flavor is in a large part smell. So, I would say most of what the flavor that you perceive in a bite of food is through your nose. But then it's also the other senses. What does it feel like? What does it look like? What does it sound like, etc. And one of the things that we really like as humans is balance. And so, when food has all of the taste sensations, a little bit of salt, a little bit of sweet, a little bit of sour, a little bit of bitter, and umami, that's something that we really gravitate towards. So in some ways, salt is something that balances out taste. Salt is actually pretty interesting, too, because it has the ability to reduce the perception of bitterness. So, say you are going to eat a brussels sprouts and you know, that's a relatively bitter vegetable, which I happen to love. But I really love them when they are sprinkled with salt. And that salt can reduce the bitterness and increase your perception of sweet, sour and umami, too. So what salt is doing is not only balancing out what you're tasting, it's balancing out how you perceive those tastes to make it as appealing as possible for your brain.

Well, you're kind of answering another question. So, let me play you what Duncan wants to know.

[Duncan] I'm five years old. And my question is, why do we need salt to make sweet cookies?

[Jane] Why do we need salt to make sweet cookies?

[Molly] It's such a good question. In so many bakeries, you'll see chocolate chip cookies with salt on top or salted caramel, or, you know, sweets that have salt either sprinkle on top or as part of the recipe when you're baking. And we actually did an experiment about this for the Young Chefs Club not

too long ago, which is also on our podcast *Mystery Recipe*, because we really wanted to know what would salt, additional salt, do to a sweet recipe?

[Jane] And we're actually going to hear six minutes of that experiment now from an episode of *Mystery Recipe*. You're going to hear Molly and another voice, her co-host, Mitsi. Mitsi is an oven mitt.

[Molly] Our pressing question was, can salt make sweet things sweeter? As always, any good experiment starts off with a hypothesis.

[Mitsy] A hypothesis, for those of you who haven't done science with us before, is a fancy word for a guess. What you think the outcome of an experiment will be.

[Molly] Exactly, Mitsy. Very nice.

[Mitsy] I've been paying attention.

[Molly] Here's what our recipe testers thought. How about you, Katherine?

[Molly] What do you think the salt is going to do to the cookie?

[Katherine] I think it might balance out a little bit the sweetness of the cookie.

[Molly] What about you Adele? What do you think the salt is going to do to these cookies?

[Adele] I think it'll kind of add like more dimension to it, and maybe add a bit more crunchiness.

[Molly] Mmhmm. So crunchiness of the salt itself on top. I like it.

[Mitsy] So not everyone agreed at the start?

[Molly] No, but that's what makes for a good experiment. We were going to test this theory out on some delicious brown sugar cookies. So first we had to bake them.

[Mitsy] Oh, my favorite!

[Molly] All right. I've already preheat our oven, Jeff do you want to grab the two baking sheets there?

Take about a tablespoon measure of this dough.

[Molly] And roll them in your hands. So now we have to get these awesome cookies into the oven.

[Katherine] That smells really good.

[Adele] I can smell them rising.

[Mitsy] That sounded delicious.

[Molly] Oh, it was. That's also the part you really need a grown up for.

[Mitsy] You can't take safety too seriously.

[Molly] Once the cookies were baked, we were able to set our control and our variable. Any idea what a control is, Mitsy?

[Mitsy] Uh, a control is something you use to change the channel. On the television.

[Molly] That's not false, but also not what we're talking about today. A control is a part of the experiment that is unaffected by what we're testing, so that we have something to compare things to.

[Mitsy] Ah, so some cookies left alone without salt?

[Molly] Exactly. If we only tasted the salty cookies, we wouldn't have anything to compare them to. So unsalted cookies are our control.

[Molly] Next, we prepared the variable.

[Mitsy] A variable is like a variety of tables. So you have lots of places to sit and talk about these cookies.

[Molly] Not quite. A variable is the part of the experiment that is different. It is often simply what you are testing. In this case, we sprinkled salt on one of the trays of cookies so we could taste them with salt. So salt was our variable.

I'm gonna sprinkle the salt over the cookies now, spread pretty evenly.

[Mitsy] Gotcha. So the plain cookies were our control and the salt was our variable.

[Molly] Right. Next, it was time to collect our data.

[Misty] A.k.a. eat some cookies!

[Molly] We have baked two identical trays of brown sugar cookies and sprinkled the flaky sea salt on one of the trays. So now to get our data so that we actually have some evidence to support our hypotheses, we're going to have each of you pick up one cookie from the salt tray and one cookie from the non-salt tray and take a bite of each one.

The final step in any experiment is to analyze that data.

[Mitsy] So, what were the results?

[Molly] What about you, Kevin?

[Kevin] Well, my original hypothesis was that the salt would like balance it out. And it definitely balances out and you taste like the salt and the sweetness. But it also just adds another like really good flavor to the cookie.

[Molly] So which of these two cookies would you rather eat?

[Kid] Salt.

[Kid] Salt.

[Kid] Salt.

[Mitsy] That's amazing. The salt, which is salty, actually makes sweet things taste sweeter. Wow!

[Molly] That's right. The salted sugar cookies tasted sweeter. And there's a scientific explanation for that.

[Mitsy] There always is. Molly, you're amazing, have I ever told you that? I really look up to you. As a person, [mumbled speech]. Oh man, these cookies are really good.

[Molly] Let's save some of those cookies for after the segment.

[Molly] But OK. So the science.

If you look at recipes for sweets like cookies, cakes and even ice cream, they almost always include a small amount of salt.

[Mitsy] But when you eat those sweets, they don't taste salty.

[Mitsy] So why include the salt?

[Molly] One of salt's many superpowers is that it changes the way that other tastes taste.

[Mitsy] Ha ha, try saying that 10 times fast. Other tastes taste. Other tastes taste. Other tastes taste. Other tastes taste. Tastes. Tasty. Other taste. Taste. Other taste. Taste. Tasty.

[Molly] Adding just a little salt.

[Molly] Not enough to make something taste salty can actually make food taste sweeter.

[Mitsy] But why?

[Molly] Scientists only partially understand why this works. When you're eating your taste buds send messages to your brain about the taste they detect in your mouth.

[Mitsy] So when I eat something sweet, my tongue, which is covered in taste buds, sends a message to my brain that says: Sweet.

[Molly] Exactly.

[Molly] One theory is that salt blocks your taste buds from tasting bitterness.

[Mitsy] So if you taste less bitter, your brain believes that what you're tasting is more sweet.

[Molly] Yes, totally. We also noticed some other flavors in the salted cookies. They tasted nuttier and some tasters detected a caramel flavor.

[Mitsy] Could salt also bring out other flavors in food?

[Molly] Scientists say yes, but they still don't totally understand why, yet.

[Jane] That's a taste. Get it? Of *Mystery Recipe*. So it turns out the cookie testers all agreed that cookies with a little bit of salt tasted better than the ones that didn't have salt, supporting the idea that a little salt can make things actually taste sweeter. Coming up, why are marshmallows soft? and answers to other food questions.

This is *But Why: A Podcast for Curious Kids*. I'm Jane Lindholm. We're answering your cooking and food questions today with Molly Birnbaum, host of the new podcast *Mystery Recipe*. As much as I love talking about cookies, let's move on to other questions.

[Parker] My name is Parker and I live in Salt Lake City. I'm six years old and my question is why do seasonings taste good on food but don't taste good when their alone?

[Jane] Parker wants to know why seasonings taste good in food, but don't taste good on their own. And this is partly, Molly, a little bit of personal taste, right? Because some people might like the taste of some seasonings on their own. Like salt that we've talked about. But some seasonings. Yeah. It's just, you know, you don't want to put, you know, a spoonful of cumin into your mouth, but cumin in your shrimp fajitas is going to taste amazing.

[Molly] Yeah, exactly. It is in part personal preference. I mean, when you talk about seasonings, that can be salt, that can be pepper and that can be a whole range of spices. Those are usually the things that we consider to be seasonings for your food. And salt, I don't know too many people who just want to eat straight salt, maybe a tiny bit of straight spices. I don't know anyone who likes to eat spoons, bowls of straight spices. They are not a wonderful texture and they are just so intensely flavored. I would say that salt and pepper and spices are all so intensely flavored on their own. That's why we don't want to eat them by themselves. But it's all about balance. So when you're adding salt to food, it balances out the taste sensations. It's something that we crave. So it adds a nice little salty boost. Spices add interesting flavor and flare, things that you really are perceiving when you're inhaling and exhaling while you eat. It makes food more interesting. I think the personal preference really comes in in the amount that you like in your food. Some people like a tiny amount of salt. Some people like a ton of pepper in, say, their scrambled eggs. You know, I know people who love cumin and will put it in almost anything. And people who hate cinnamon and don't want that in any of their baked goods. So it really is super personal. And because smell plays such an important role in flavor and spices are mainly smell. They also come with memory attached to it, because I think smell is the sense that has the most memory attached to certain smells. And so, some people like cinnamon, because it reminds them of the holidays with their family.

[Jane] So you mentioned cinnamon and that's an interesting seasoning or spice as well, because, you know, often we do think about it. And much of American culture as something that you put in sweet foods. But in a lot of cultures, cinnamon is a spice that goes into savory foods, the foods that are not sweet. And so, it can be used really differently, depending on what you're cooking and what flavors you're trying to highlight in your other ingredients.

[Molly] Yeah, exactly. Cinnamon is one of those spices that is used all over the place in so many different cultures, in so many different types of food. And when cinnamon is in a baked good with a lot of sugar and flour, it has

you know, it's used in one way. It's often holidays. It's kind of a winter, warm thing. But it can also be used in savory curries or stews or moles and has a totally different flavor profile when it's surrounded by different savory ingredients.

[Jane] Yeah. Cocoa is like that, too, if you've ever tasted cocoa plain, blech! There's no sugar in it, but you can use it to spice up different chilies and things like that. Or you can use it to make really sweet and tasty hot chocolate.

[Molly] Exactly. That's a wonderful example because it can be such a savory ingredient or it can be the backbone of something super sweet. It works both ways.

[Jane] All right. So let's tackle another question. And this is an interesting one to me, because it gets into how foods can change when you add heat. And sometimes when you add other ingredients.

[Roland] Hi, my name is Roland. I am five and a half years old. My question is, why do egg whites cook white when they're actually clear when they're not cooked?

[Molly] It's a great question. So why did egg whites cook up white when they're clear, when they're raw? So when you crack an egg and you dump it out, the white is actually translucent. But when you have a hard-cooked egg, it is white and definitely not see-through. So raw egg white is made up of tightly balled up proteins floating around in water, and light can actually pass between the balls and through the egg white, which is why it's clear and transparent. But when the egg is exposed to heat and those proteins get heated up, what they do is they uncoil and link together and they create almost like a fabric that light bounces off of, which is why it appears white and you can't see through it any longer. So in essence, it's all about the proteins present in the egg white, which are loose and see-through when they're raw and get tangled up and create a pretty dense network when they're cooked.

[Jane] Eggs are amazing, aren't they? Because they also do so many different things depending on how you're using them. I mean, they're just remarkable.

[Molly] Eggs are one of the best ingredients. There's so much that you can do with them, even just the fact that an egg is two ingredients in one: the white and the yolk, which both have very different properties and you can do very different things with them is so cool. It's a natural two-ingredient-in-one thing, and you can use them in savory things, in sweet things. I mean, like there is no end to what you can do with eggs.

[Hattie] Hi, my name is Hattie and I'm from Portland, Oregon. And I'm six years old. My question is why are marshmallows soft?

[Molly] And marshmallows are very soft.

So that is an excellent question. Marshmallows are essentially soft because they're made of flexible molecules and they are filled with air. So because they are made of flexible molecules and they're filled with air, you can squish them and they bounce back. It's the same reason that balloons and foam rubber are soft, too.

[Jane] Our last question is from Arthur, and Arthur's question isn't so much about cooking as the ways that our food system work to try to keep us healthy.

[Arthur] Hello, my name is Arthur. I live in Camrose, Washington. And I'm 8 years old. My question is, how do they know when to put expiration dates on food? Thank you.

[Jane] So Arthur's question is, how do they know when to put the expiration dates on food.

[Molly] For expiration dates on things like canned food. It's not really an expiration date per say. It doesn't mean that the food in that can is bad once it hits that date. What it's referring to is the manufacturer's recommendation for peak quality. So not particularly safety concerns. So as long as cans of food look good and have been stored well, they should, their contents should remain safe pretty much indefinitely. But if a can has been compromised, the seal has been compromised, or open, or is bulging in any way, or spreading liquid when you open it, then I would I would get rid of it. But in general, an expiration date for canned goods is before that it will be at its peak quality. And then for things like snack foods, when food developers are creating new snack foods, they package them up and either leave it on a shelf for several months or do something called an accelerated shelf life test where they expose these snack foods to heat or light or humidity or other conditions to simulate what it would be like to be stored for a long time in someone's house. And they see how long it takes before the food doesn't look and taste good enough to sell. So, for these packaged goods, the expiration date really is the peak quality thing.

[Jane] And then for things that are what we sometimes call perishables or things that can go bad fairly quickly, what should people be on the lookout for? So milk might be an example, there's a sell by date or, you know, the expiration date on it, but you can kind of tell when milk is bad because it will

smell bad and it will taste bad. What are other ways that people might want to figure out if something is going to be bad for them to eat?

[Molly] I think smell and visuals are the most important way. They're the expiration dates are a good indication, especially with perishable foods of, "I should check and see if this is still okay." And with milk, it will smell bad. Vegetables. Sometimes vegetables get a little bit slimy or wet or they have a smell to it. That's not normal. Those are really good ways of understanding if something is a little past its prime.

[Jane] I was told once by a yogurt maker that even if yogurt is past its sell by date, it's really just going to keep getting Tangier. And you're probably good to eat it for another maybe month or so. Is that true?

[Molly] I definitely live by that rule. So, yes.

[00:22:04] [Jane] That was Molly Birnbaum, host of the podcast *Mystery Recipe* from America's Test Kitchen Kids. They just finished their first season.

[Jane] And you might want to go back and start from the beginning so you can go through all the ingredients they work with to get to the mystery recipe family cook along in the final episode. And that's it for this episode of *But Why*. If you have a question about anything, have an adult record it and send the file to questions@butwhykids.org. It's easy to do on a smartphone. And we'll do our best to get an answer for you.

But Why is produced by Melody Bodette and me, Jane Lindholm, at Vermont Public Radio. Our theme music is by Luke Reynolds. We'll be back in two weeks with an all new episode. Until then, stay curious.