

Logbook: Bubble trouble

Introduction:

Bubble gum is a chewy substance that thousands chew every year. Lots of people like bubble gum because it gives good memory and it covers bad breath. But the problem with bubble gum is that it contains lots of sugar and that could lead to diabetes or high blood pressure. Me and my partner decided to make bubble gum which didn't lead to this situation.

- https://en.wikipedia.org/wiki/Bubble_gum
- <https://www.history.com/news/chew-on-this-the-history-of-gum>

Hypothesis

Malak

I think that if we use stevia, it will make the bubble gum healthier and safer, and if we use spruce it will make it less harmful to the digestive system

Lyna

I think that if we use Spruce gum instead of gum base, it has more benefits. For instance, Spruce gum helps clean our teeth by chewing the gum. Spruce gum will have less damage to our digestive system.

Question

How do we make bubble gum healthier and safer for humans?

Is there a type of safe gum for humans?

Materials

- Spoon or a spatula
- 50g Natural gum base
- Powdered sugar
- Flat surface
- Heating device /Microwave
- Natural flavor
- Citric acid
- Glucose syrup d-42
- Neutral-flavored vegetable oil
- Oil-based flavoring
- Food coloring
- Fructose
- Knife
- Powdered sugar
- Plastic wrap
- Stevia
- Honey
- https://www.google.com/search?q=how+to+make+gum&sca_esv=6758288794fecb0b&rlz=1CATMUU_enCA1071CA1071&tbm=vid&prmd=visnmbtz&sxsrf=ACQVn08woPyda-72oeUD5XCXo4gFvckf5Q:1708134806402&ei=IhHQZcqTGJqq0PEPs6qPoAs&start=10&sa=N&ved=2ahUK_EwjKtvSCorGEAxUaFTQIHTPVA70Q8NMDegOIGBAW&biw=1366&bih=599&dpr=1&safe=

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- https://www.google.com/search?sca_esv=6758288794fecb0b&rlz=1CATMUU_enCA1071CA1071&sxsrf=ACQVn09GGFMZ0Dk1gSysaDr49DpiasbhhA:1708134802567&q=how+to+make+gum&tbm=vid&source=lnms&prmd=visnmbtz&sa=X&ved=2ahUKewiJroqBorGEAxX_ODQIH T08AesQ0pQJegQICxAB&biw=1366&bih=599&dpr=1&safe=active&ssui=on#upstate=iv&v=cid:f17f1a31,vid:LanJO4BlOmc,st:0

Purpose of the project

Bubble gum is a taste-chewing substance that can be used to make a strong jawline. I chose this project because bubble gum is not healthy, 374 billion gums are sold every year worldwide 100,000 tons are chewed every year, that habit is not good for human beings because they contain a lot of sugar and chemicals that are not healthy like titanium dioxide and artificial food dye that could lead to serious health harms. That's why I wanted to make a healthier bubble gum that is safe for humans to chew on every day with no health problems.

- <https://globaledge.msu.edu/blog/post/55563/global-chewing-gum-market-holds-steady>
- https://www.google.com/search?q=how+much+bubble+gum+do+people+consume+every+day+around+the+earth&sca_esv=595152334&rlz=1CATMUU_enCA1071CA1071&sxsrf=AM9HkKlvj3-Hb11GB4FXe60314-6ops8Pg%3A1704224293433&ei=JWaUZfGfGr_v0PEP6N-iiAM&ved=0ahUKewixrIKdur-DAXW_NzOIHeivCDEO4dUDCBA&oq=how+much+bubble+gum+do+people+consume+every+day+around+the+earth&gs_lp=Egxnd3Mtd2l6LXNlcniAiQGHvdyBtdWNolGJIYmJsZSBndW0gZG8gcGVvcGxIIGNvbnN1bWUgZXZlcnkgZGF5IGFyb3VuZCB0aGUgZWFydGhlGocBUNOKWKM7cAN4AZABA.IgBkAGgAesDqgEDNC4xuAEMyAEA-AEBwgIKEAAYRxiWBBiwA8ICCBAAAGIAEGKIE4gMEGAAGQYgGAZAGCA&sclient=gws-wiz-serp&safe=active&ssui=on

Design of the project

How I designed this project was there two main concepts. The first concept was stevia. Stevia benefits our project by making it healthy and sugar-free for people who have diabetes and who are not capable of eating normal sugar. We added this sugar when the spruce was liquid to make it sugar-free.

The first benefit was making the bubble gum healthy by using a special sugar that had no calories and wouldn't get you to diabetes. We use a sugar called stevia, stevia is a plant-based sugar stevia sweetener that has no calories in it. They come from a plant called Stevia rebaudiana, a plant from Brazil and can be found in Japan and China. Additionally, stevia has 400 to 350 sweeteners more than sugar. Finally, stevia is also used for medicine and weight loss.

The second concept was helping the digestive system in digesting more gum and making it healthy. The spruce gum benefited us in many ways. Bubble gum takes 4 days to digest in the stomach, unlike spruce gum which takes 3 days. The spruce gum helps aid your digestive system. Spruce Pitch is incredible for your health, your gums and cleaning the teeth taking the plaque off, freshening your breath, and improving your digestion additionally, it also helps in bringing more oxygen into your blood and it has many antimicrobial antiviral substances and properties that is incredible. You can find spruce in a coniferous tree in winter.

- https://www.google.com/search?q=how+to+make+spruce+gum+at+home&rlz=1CATMUU_enCA1071CA1071&oq=how+to+make+s&gs_lcrp=EgzjaHJvbWUqCAgBEEUYJxg7MgYIABBFgDsyCAgBEEUYJxg7MgYIAhBFGEEyBggDEEUYPtIGCAQORRg8MgYIBRBFgDwyBggGEUYQTIGCAcQRRhB0gEINzAzOGowajeoAgCwAgA&sourceid=chrome&ie=UTF-8&safe=act

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https://thedruidsgarden.com/2021/10/03/spruce-resin-salve-or-pine-resin-salve-recipe/](https://thedruidsgarden.com/2021/10/03/spruce-resin-salve-or-pine-resin-salve-recipe/)

Procedure: Spruce Gum

1. Look for spruce trees and collect the sap.
2. Put all the spruce sap that you collected in a box
3. Grab a pot that has aluminum foil on the bottom, and put parchment paper over the aluminum foil.
4. Get a sieve, then put all the sap that you collected
5. Start shaking the sieve until all of the bark and dust get off.
6. Put the sieve on the pot, then put both of them in the oven for A couple of hours or until it stops dripping at 250F
7. After taking it out of the oven, if you want to have color put food coloring in the sticky sap, then mix for about one minute, start playing with it, roll it if it gets stiff, and put it in the oven for a couple of minutes
8. Next, gently start rolling it again, leave it to cool for a few seconds then start cutting it into chewable sizes.

Gum base:

1. soften the maltose by placing the packet into a cup(or bowl) of hot water. Handle the hot water carefully and set aside.
2. Open the package of gum. Remove the solid piece of gum base from the packet and put it in a disposable, microwave-safe container.
- 3.. put the gum base in warm water and set it aside.
4. put the corner off of the powdered sugar packet to open it for about a third of the packet,(about 2 tablespoons) into your work surface and form a small Eno-shaped mound with a hole between 2 inches wide in the middle you should not be able to see your work surface through the whole set aside the rest of the powdered sugar.
5. Drain the water from the soap base you can leave a small amount of water to keep. The gum was heated evenly when it was in the microwave.
6. Microwave the gun base for 30 seconds (or less) at a time after each cooking individually steer the mixture and check to see if the gum base has softened by pressing on it gently with a fork continue to microwave the gum base in short individuals until the gum base has softened into a thick gooey liquid do not overheat the gum, or it may begin to smell burnt. Be careful when removing the container of the heated gum base from the microwave it will be, very hot and sticky

Background Research

In 1928, Walter Diemer, an accountant for the Fleer Chewing Gum Company in Philadelphia, was

experimenting with new gum recipes. One recipe, based on a formula for chewing gum called "Blibber-Blubber", was found to be less sticky than regular chewing gum and stretched more easily. This gum became highly successful and was eventually named by the president of Fleas as Dubble Bubble because of its stretchy texture.

Some research has concluded that chewing gum improves memory, concentration, sustained attention and reduces stress, other research has found no such benefits. A recent systematic review of 21 studies found not a strong, but a statistically significant relation between chewing and sustained attention

- <https://www.smithsonianmag.com/arts-culture/a-brief-history-of-chewing-gum-61>

Benefits of Spruce gum

The spruce gum benefited us in many ways. Bubble gum takes 4 days to digest in the stomach, unlike spruce gum which takes 3 days. The spruce gum helps aid your digestive system. Spruce Pitch is incredible for your health, your gums and cleaning the teeth taking the plaque off, freshening your breath, and improving your digestion additionally, it also helps in bringing more oxygen into your blood and it has many antimicrobial antiviral substances and properties that is incredible. You can find spruce in a coniferous tree in winter.

- <https://www.fourseasonsnorth.com/product-page/wild-spruce-gum-6oz-17g>

Data:

As you can see, on my first data I compared different types of gum on how long it would take for the gum to digest in your stomach. The gum brands that I used to compare were Hubba Bubba, Spruce Gum, Juicy Fruit and Mentos. Each color on the data represented a different type of gum, the blue was Hubba Bubba and it was 22.2%, which means the Hubba Bubba gum took 4 days to dissolve in your stomach. The mentos took 6 days, the juicy fruit took 5 days and finally spruce gum took 3 days to digest in your stomach. The best option of all of these gums was spruce gum if you want to stay healthy.

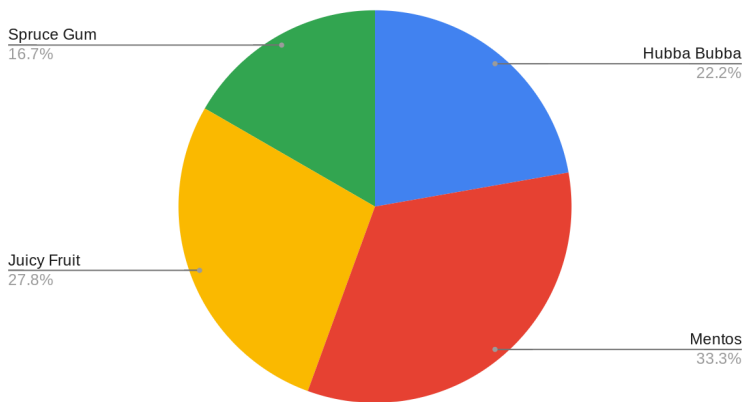
In the second data, I compared three flavors of gum, Hubba bubba, Juicy fruit and spruce gum. The blue color represents the amount of sugar there is in the gum. Hubba Bubba had 6.00 grams of sugar in it, Juicy fruit had 3.00g of sugar in it and spruce gum had no sugar. In the other bar the red represented how many calories you would get if you kept on chewing the gum, Hubba bubba you would get 25 calories, if you chewed Juicy Fruit you would get 10 calories, If you had spruce gum you would get zero calories. If you were on a diet I would recommend you to choose Spruce Gum, but if you're a kid I recommend Juicy Fruit.

In my third data, I research what people want to see in gum nowadays. They wanted to see vitamins, gut health, heart fitness, mass management, and immunity uplift. Vitamins were one of the things requested on the gum data because when they chew gum, they want the gum to produce vitamins that help boost the immune system, support normal growth and help cells and organisms do their job. Each color represented a different category, the blue was vitamins and it was 23.3%, the red was gut health and it was 21.3%, the

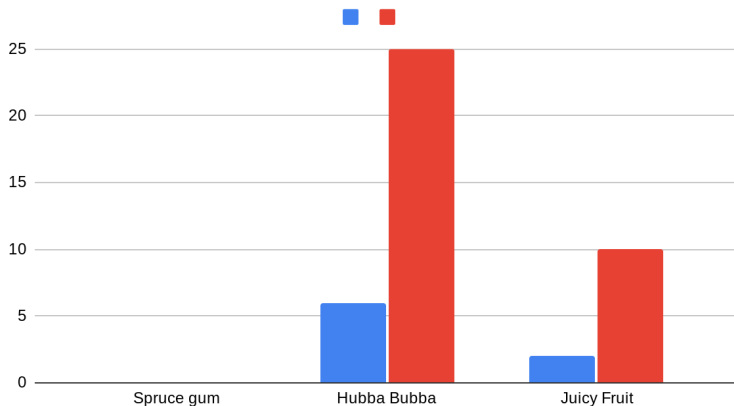
yellow was the immunity uplift, the green was mass management and it was 18.0% and finally the orange which represented the heart fitness and was 17.3%.

My last data was about the bubble gum me and my partner made, we made a healthy chewable bubble gum. In this data we listed its features like if it freshens our breath and the percentage was 30% because we didn't have minty flavors, another one was keeping my mouth from being dried this percentage was 60% because when we were chewing the saliva kept the mouth from being dry, fun to chew the preaching was 80 percent because you could feel the flavors melting in your mouth, helps me manage my stress and the preacher was 50% because when I got some of the gum, it helped me become more focused and finally it satisfies my longing for something sweet, and the percentage was 20 percent. We decided based on our experiment, we also had someone test it and tell us.

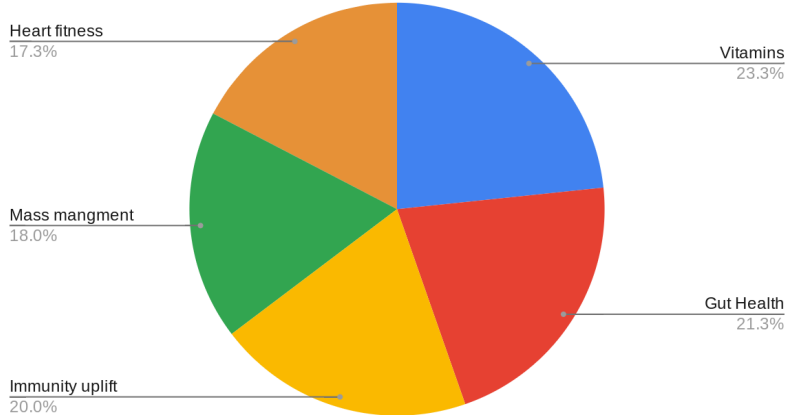
How long do different gum take to digest in your stomach?



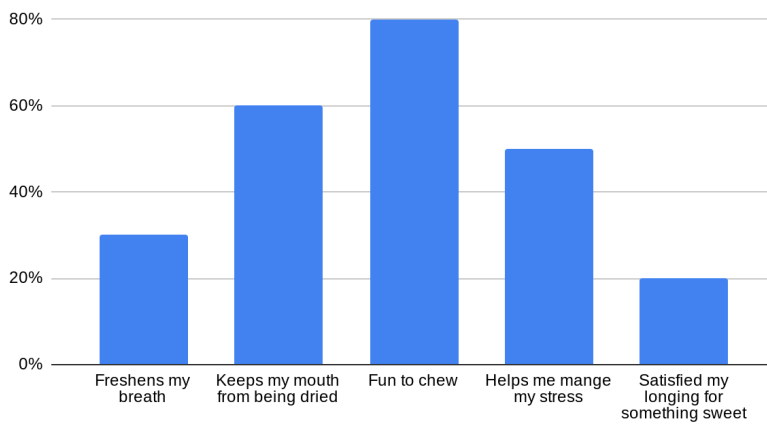
Which gum brand has more calorie/sugar



What people want to see in gum now a day



Features of Bubble trouble



- <https://www.ift.org/news-and-publications/food-technology-magazine/issues/2007/september/features/understanding-the-science-behind-chewing-gum>
- <https://www.mintel.com/insights/food-and-drink/chew-on-this-new-ideas-for-gum-in-2017/>
- <https://www.designlife-cycle.com/new-page-48>
- <https://www.marketresearchfuture.com/reports/chewing-gum-market-11819>

Variables:

Controlled variable

- Gum base.
- Heat/microwave
- Stevia (sugar)
- Glucose syrup d-42
- Natural flavors

Manipulated variable

Result:

Our experiment successfully worked, and it produced healthy gum by using stevia and no artificial flavors. To make this project succeed we used the method of making healthy chewable bubblegum. Stevia benefited us by making a bubble that will cause no harm to your digestive system, blood sugar, diabetes, tooth decay, etc. Additionally, we wanted to do healthy gum because it helps clean your teeth, boost your memory, reduces heartburn, helps you in weight management, and prevents disease and diabetes. If I experimented again I would improve the flavoring and the taste. I would also like to make it with high quality next time.

Conclusion:

It's concluded that gum has a good side to it and a bad side. The good thing about gum is it provides good memory and covers bad breath. The other side is it has a lot of sugar, and might cause cavities, jaw pain and headaches if chewed a lot. So, that's why me and my partner decided to research spruce and make gum healthy chewable gum. Spruce gum had lots of benefits in the project.

Application:

We all know the myth that if you swallow gum it stays in your digestive system for 7 years, but that's not true. Some pieces stay longer than others, like Hubba Bubba gum which stays for 4 days, but Sprue gum stays for 3 days. I think 3 days is Better than 4, and the other bubble gum causes jaw pain.

It is a good idea to chew gum in class. A university in Texas experimented to test if gum is better to chew gum before the test, during the test, or not chewing gum in the test. The experiment concluded that people who chewed before got a good mark. The people who chewed during the test got the best mark, but the people who did not chew gum did the worst

Date :		Time :	Event:
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December 10,2023		11:33am	On December,10 I got the slides from slides I was setting up everything. I started planning on how I wanted to do the bubble gum, my first thought was to make about 4 different types of bubble gum, the first bubble gum I was gonna make was it had no sugar, the second was it helped the digestive system, the third was making it different types of flavor and the last one was getting a sugar that does not increase weight.
December 11,2023		1:30pm	On December 10 I wrote the title of each slide and researched information. My mom told me not to do the 4 different types of bubble gum and just do it in one gum. I found some videos and websites. I was also looking for three different things when I was searching for the disadvantages of gum: How much is sold in a day, week, month and year.
December 12,2023		6:10pm	My partner started working on the slides, each of us got three slides and we were in charge of our slides. We started working on it. We gathered all the information and wrote it down in our own words.

December 13,2023		6:4pm	<p>I and my partner did some of the slides, I wrote the question and the purpose of the project. My partner Lyna Abeddou finished the background research. We tried reassuring more and getting more information to fill our slides.</p>
December 14,2023		5:24am	<p>On this day I made my purpose of the project better and by adding more information. I also watched a video on how to make the gum five times, and wrote the materials down on the slideshow.</p> <p>https://www.google.com/search?q=how+to+make++gum+at+home&sc_esv=21d8767eaab99d7a&rlz=1CATMUU_enCA1071CA1071&sxsrf=ACQVn0-XW_FDHyqyBGEFr2B3NXISHcfUwOw%3A1708275791440&ei=TzjSZY24GuWY0PEP7b2k-A0&ved=0ahUKEwjNm-idr7WEAxVIDDOIHe0eCd8O4dUDCBA&uact=5&oq=how+to+make++gum+at+home&gs_lp=Egxn3Mtd2l6LXNIcnAiGGhvdyB0byBtYWtIICBndW0gYXQgaG9tZTILEAAYgAOYigUYkQIyBhAAGAcYHjJGEAAYBxBiKBRiRAjJGEAAYBxgeMgYQABgHGB4yBhAAGAcYHjJGEAAYBxgeMgYQABgHGB4yBhAAGAcYHkjPEIC0EFi0EHADeAGQAQCYA</p>

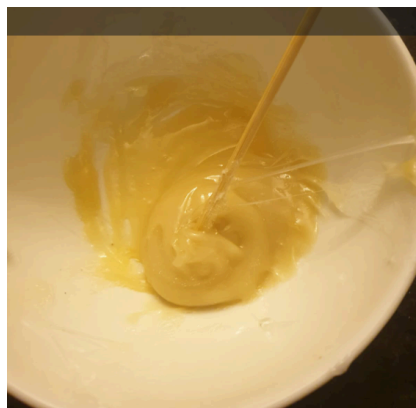
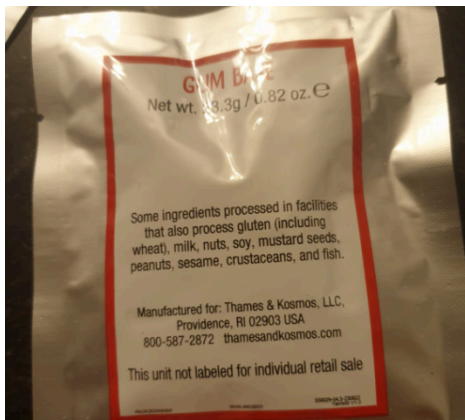
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December 14 2023		4:39pm	On the same day I started working on the design of the project and my partner was working on the introduction.
December 14 to 26 2023		1:49pm	In the middle I took a break and resherd a little bit about spruce.
December 30,2023		9:40 pm	I researched more and when I did I wrote my question down.
Jan 4, 2024		6:00pm	I wrote down my hypothesis
Jan 10,2024		2:pm	We talked about different types of sweeteners and searched for which one was the best.
Jan 15,2024		8:21pm	Me and my partner came to a conclusion that we will be using stevia because it's the safest one and is commonly used for cooking. We also searched a lot about steiva.
Feb 1, 2024		7:4pm	Me and Lna watched a lot of videos on how to make spruce gum. Lyna wrote the method.
Feb 14,2024		6:54am	I wrote down the materials for the spruce gum.

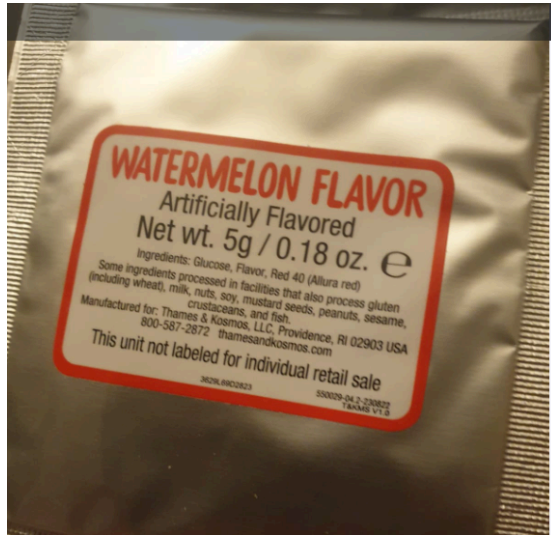
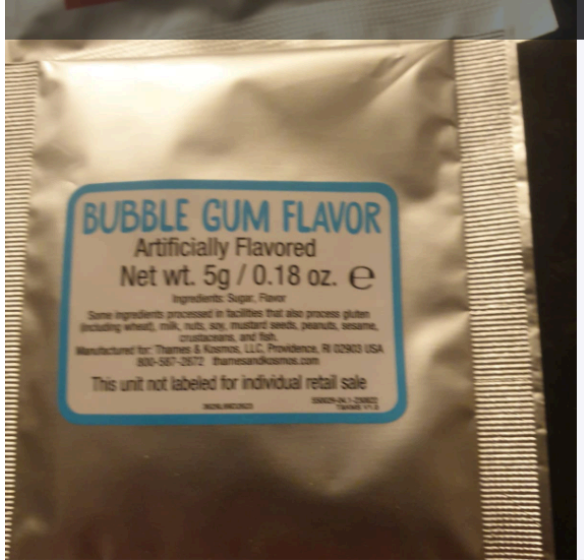
Feb 15,2024		7:00pm	Mw and my partner did the experiment and we got positive results,and I wrote them down.
Feb 16,2024		11:am	Lyna wrote down the method for the gum base experiment.I also did the variables.
Feb 17,2024		9:pm	I wrote down my data and did the graphs .
Feb,18 2024		8:am	We checked our work and revised it.

References:

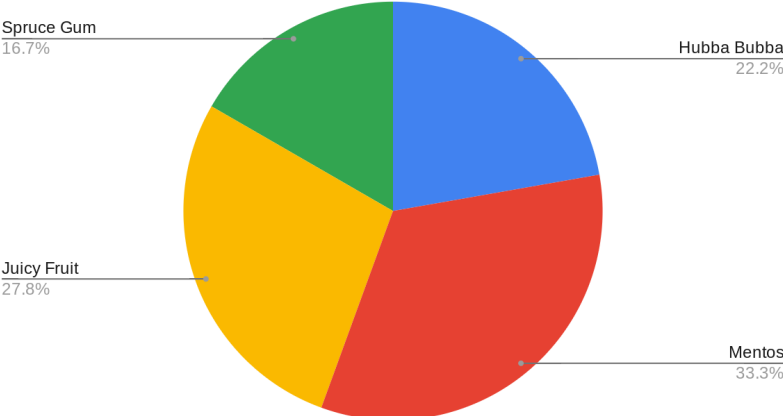
- https://en.wikipedia.org/wiki/Bubble_gum
- <https://www.history.com/news/chew-on-this-the-history-of-gum>
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- <https://globaledge.msu.edu/blog/post/55563/global-chewing-gum-market-holds-steady>
- https://www.google.com/search?q=how+much+bubble+gum+do+people+consume+every+day+a+round+the+earth&sca_esv=595152334&rlz=1CATMUU_enCA1071CA1071&sxsrf=AM9HkKlvj3-Hb11GB4FXe6o3l4-6ops8Pg%3A1704224293433&ei=JWaUZfGfGr_v0PEP6N-iiAM&ved=0ahUKEwixrIKdur-DAXW_NzQIHivCDEO4dUDCBA&oq=how+much+bubble+gum+do+people+consume+every+day+around+the+earth&gs_lp=Egxnd3Mtd2l6LXNlcniAiqOGhvdyBtdWNolGJlYmJsZSBndW0gZG8gcGVvcGxIIGNvbnN1bWUgZXZlcnkqZGF5IGFyb3VuZCB0aGUgZWFydGhIgcBUNQWKm7cAN4AZABAjgBkAGgAesDqgEDNC4xuAEMyAEA-AEBwgIK EAAYRxlWBBiwA8ICCBAAAGIAEGKIE4gMEGAAgOYgGAZAGCA&scient=gws-wiz-serp&safe=active&ssui=on
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- <https://thedruidsgarden.com/2021/10/03/spruce-resin-salve-or-pine-resin-salve-recipe/>
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- <https://www.fourseasonsnorth.com/product-page/wild-spruce-gum-6oz-17g>

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- <https://www.mintel.com/insights/food-and-drink/chew-on-this-new-ideas-for-gum-in-2017/>
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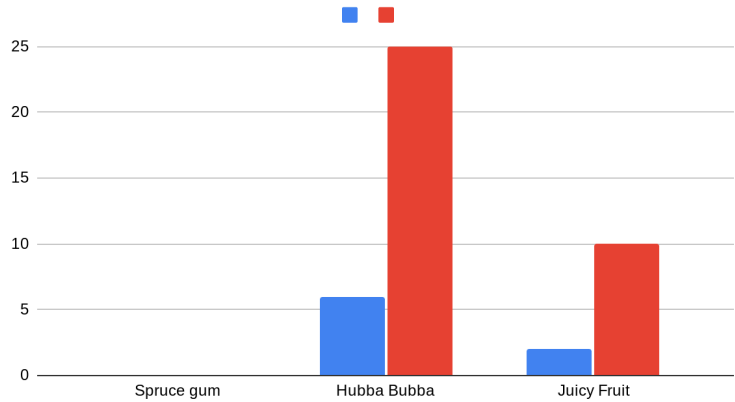




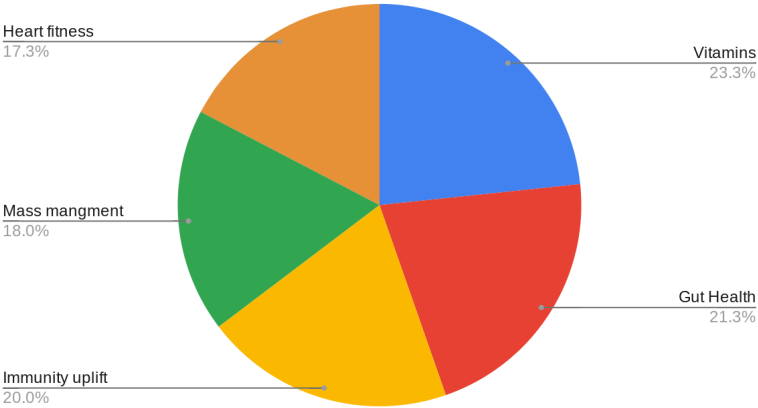
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