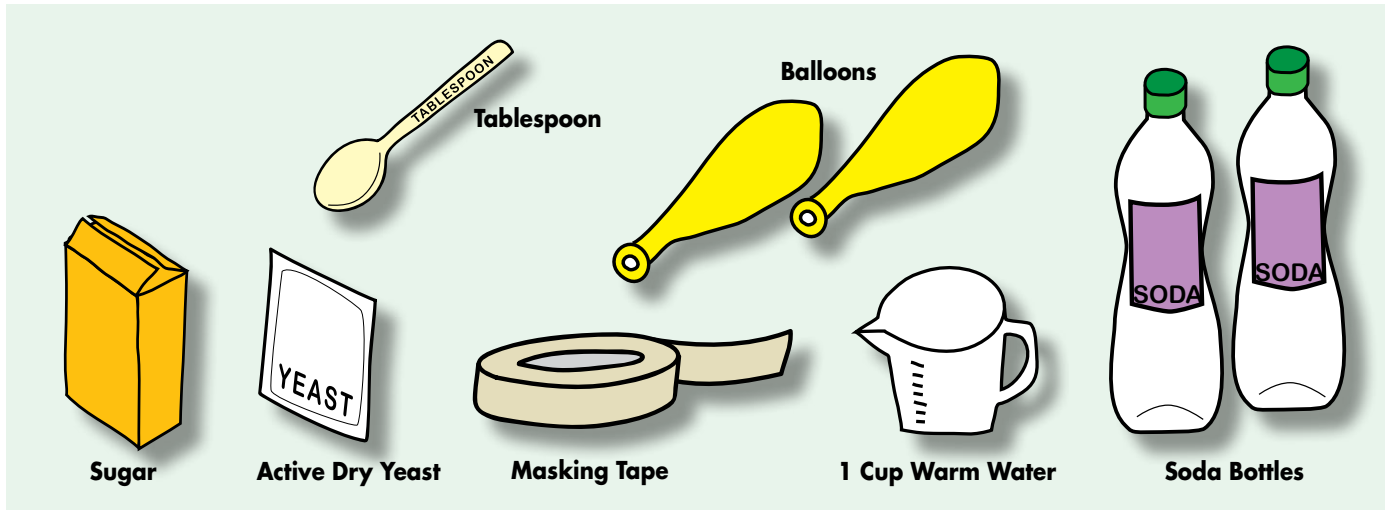


Yeast Balloons

Find What You Need...

- 1 package active dry yeast
- 2 latex balloons
- 2 small, empty plastic soda bottles (12 oz. works best)
- 1 cup of warm water
- 1½ tablespoons sugar
- A tablespoon measure



Can You See Microbes Burp?

If you ate a sandwich at lunch today, the bread was most likely soft and chewable. The reason your bread wasn't hard as a brick is because it was made with the help of tiny microbes called yeast. These one-celled organisms perform what looks like a magic trick, making bread dough rise up and soften.

But even though it looks like magic, what's going on inside the bread dough is biochemistry! Whole colonies of living yeast are feeding on sugars in the dough, and then "burping" out gas. These "burps" of gas then push against the dough, making it grow bigger and higher.

Do you have a slice of bread handy? Check out those little holes all over the bread. They were formed by tiny gas bubbles burped out by yeast!

People have been using yeast to bake bread for thousands of years, possibly going all the way back to ancient Egypt. And they've been using yeast to make beer and wine, too. The fizz in beer was made by yeast feeding on grains like barley and rice, and then "burping" out gassy fizz and turning (or fermenting) the grain into alcohol.

Yes, it's true that some microbes can be harmful to people and make them sick. But many microbes can do useful and wonderful things. Yeast has been making people happy for thousands of years by helping to put delicious food and drink on our tables.



Activity: Give Yeast Some Sugar And Watch What Happens

1. Rinse out the soda bottles.
2. Pour $\frac{1}{2}$ cup of fairly warm water into each bottle.
3. Add all the sugar to one bottle and mix. Do not add sugar to the other bottle.
4. Pour the contents of half of one package of yeast into each bottle. Swirl the mixture around to mix.
5. Attach a balloon over the mouth of each bottle. You can add some masking tape around the edges to secure the balloons in place.

Fact:

Fact Scientists have discovered a giant fungus in Oregon. It's bigger than 1,600 football fields, and thousands of years old.

Conclusion:

What changes did you see in the balloon with the sugar? Did it change its size? Why would giving sugar to living colonies of yeast affect the size of the balloon? Are the yeast microbes "burping" out gas that expands? Did the balloon without the sugar change its size, too? Did it change as much as the balloon with sugar? What do you think accounts for the difference?

Challenge:

What happens when you change the temperature of the water? Does the balloon grow bigger faster when it's hotter or colder? How do you think the temperature is affecting the yeast? What happens if you leave this experiment running for a few days? Does the balloon with the sugar stop inflating at some point? Does this mean the yeast cells are dead, or that the sugar has run out? Add some more sugar to the bottle and replace the balloon. Does the balloon start inflating again?

Record Your Observations

	5 Minutes	15 Minutes	30 Minutes	60 Minutes
Yeast Only				
Yeast & Sugar				

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