

FOOD LAB

Edible Spheres

Ag for Life

Ingredients:

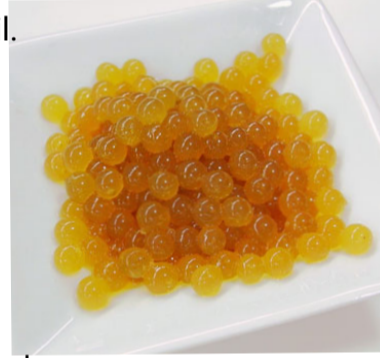
- 2 cups vegetable or canola oil, refrigerated for 4 hours
- ¼ cup plus 2 tbsp fruit juice (don't use pineapple as it has an enzyme that deactivates the gelatin), measured separately
- 1 tbsp unflavoured gelatin
- 6 cups ice cubes
- ¼ cup salt
- 1 cup cold water

Equipment:

- Tall, transparent container
- 5 bowls (2 large, 2 medium, 1 small)
- Rubber spatula
- Liquid measuring cup
- Whisk
- Squeeze bottle
- Fine mesh strainer

Directions:

- 1.) Pour oil into a container, close the lid, and refrigerate 4 hours before you want to make the spheres.
- 2.) In a small bowl, pour 2 tablespoons of fruit juice and sprinkle gelatin over surface of the liquid. Stir with a rubber spatula to get rid of any large clumps and set aside.
- 3.) Pour ¼ cup fruit juice into liquid measuring cup. Microwave on high power for about 30-45 seconds, or until steaming but not boiling.
- 4.) Pour the hot liquid over the gelatin mixture. Whisk the mixture until fully combined and no lumps remain.
- 5.) Pour the mixture into squeeze bottles and refrigerate for about 10 minutes until the liquid feels just slightly cool to touch when you hold the bottle.
- 6.) Remove the container of oil from the refrigerator and place it in the centre of a large bowl. In a second large bowl, use a rubber spatula to stir the salt and ice together. Carefully arrange the salted ice around the oil container in the first large bowl. Pour the water into a large bowl with ice.
- 7.) Its sphere time! Carefully remove the lid from the container of oil.
 - a.) Hold the squeeze bottle of flavourful liquid mixture over the container of oil at an angle.
 - b.) Gently squeeze bottle until droplets of liquid fall into oil.
 - c.) Each droplet should form a spherical shape and fall to bottom of oil.
 - d.) The more you squeeze, the bigger the droplet will be!
- 8.) In a sink, set a fine-mesh strainer over a medium bowl.
 - a.) Carefully pour the oil-sphere mixture into strainer.
 - b.) Using a rubber spatula to gently scrape any remaining spheres.
- 9.) Fill a second medium bowl about halfway with water.
 - a.) Transfer the spheres from the fine-mesh strainer to a bowl of water.
 - b.) Use a rubber spatula to gently stir the spheres in water to remove excess oil.
 - c.) Working over the sink, pour water-sphere mixture back into strainer.
- 10.) Enjoy your spheres! You can try sprinkling them on yogurt or ice cream, add them to your drink, or enjoy them alone!



Food Chemistry

The science behind the edible spheres

- After sitting in the fridge, the oil is going to be 4 degrees as this is commonly the temperature of a fridge. When the room-temperature gelatin liquid hits the cold oil, it transforms from a liquid droplet into a solid sphere. This is because gelatin is a liquid when it is above 10 degrees and a solid when it is below 10 degrees. If the oil is not cold enough, the droplets will not form spheres.
- Gelatin is a kind of protein, made up of long, thin molecules. With the cold temperature, gelatin molecules turn into a solid because they get tangled to the point that the liquid can't move around or flow. If the temperature is above 10 degrees, the gelatin molecules are loose and flexible enough to stay as a liquid.
- It is also important to note that oil and water do not mix. When you squeeze the juice (that's mostly made of water) into the oil, the lack of mixing will help form the sphere shapes! When salt is added to melting ice, it lowers the ice's melting point to less than 0 degrees. This keeps the oil as cold as possible when it's out of the refrigerator.

How does this relate to cooking and baking in the kitchen?



- A commonly made salad dressing is a mix of some type of vinegar and oil. When you add the oil to the vinegar, the oil droplets will clump together and will not mix with the vinegar.
- You typically need to whisk the two together in order to break the oil droplets up. This is called emulsification, combining two ingredients that do not ordinarily mix by dispersing one liquid (the oil) in another (the vinegar).
- By doing this, the big oil droplets break up into smaller oil droplets, to give them the appearance of being mixed.

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