



Food Science/ Healthy Living:

Bonus Lesson

Project: Egg-based Desserts

Pavlova with lemon curd

Supplies:

For the lemon curd:

- 2 large eggs yolks, (save the whites for the pavlova)
- ¼ cups granulated sugar
- 2 Tbsp. finely grated, loosely packed lemon zest (from about 5-6 medium lemons)
- 2 Tbsp. + 2 tsp. freshly squeezed lemon juice (from about 3-4 lemons)
- Pinch of fine salt
- 3 Tbsp. unsalted butter (3/4 stick), cut into 6 pieces, at room temperature

For the Pavlova:

- 2 large egg whites with no traces of yolk, at room temperature
- Pinch of fine salt
- ½ cup granulated sugar
- 1 tsp. cornstarch
- ½ tsp. distilled white vinegar
- ¼ tsp. vanilla extract, divided

To assemble:

- 1/2 cup cold heavy cream
- ½ Tbsp. granulated sugar
- ¼ tsp. vanilla extract
- 3/4 cup fresh berries, such as raspberries, blueberries, blackberries, or sliced strawberries

Time:

For the curd: 3.5 hours includes preparation and cooling time

For the Pavlova: 90 minutes includes preparation and baking time

For the assembly: 10-15 minutes

What to Do:

For the lemon curd:

1. Fill a medium saucepan with 1-2 inches of water and bring to a simmer over high heat: reduce the heat to low and keep water at a bare simmer.
2. Place all of the curd ingredients except the butter in a large heatproof bowl and whisk to combine. Set the bowl over, but not touching, the simmering water and whisk constantly until the yolks thicken and the mixture forms ribbons when the whisk is lifted from the bowl. This should take about 7-10 minutes. ****During this process is it important to make sure the water does not boil. Check by lifting the bowl from the saucepan with a towel or pot holder. If the water boils, the eggs will curdle!**
3. Once the mixture thickens, remove the bowl from the simmering water; whisk in the butter one piece at a time, waiting until each piece is completely melted and incorporated before adding another.
4. Set a fine mesh strainer over a medium bowl and strain the curd by pressing on the solids and scraping the extra curd from the underside of the strainer into the bowl. Discard the solids left in the strainer.
5. Press a sheet of plastic wrap directly on the surface of the curd and refrigerate until chilled.

For the Pavlova:

1. Arrange a rack in the middle of the oven and preheat to 250°F. Trace a 6" circle onto a piece of parchment paper with a pen or marker. Flip the paper over and place it on a baking sheet; set aside.
2. Place the egg whites and salt in a very clean, dry bowl of a stand mixer fitted with a clean, dry whisk attachment. Whisk on medium speed until the whites begin to lighten in color and only small bubbles remain, about 2 minutes. Increase the speed to high and very slowly add the sugar in a thin, continuous stream. Whisk until firm, shiny peaks form, resembling marshmallow cream, about 3 minutes.
3. Remove the bowl from the mixer and sift the cornstarch through a fine mesh strainer into the meringue. Drizzle with the vinegar and vanilla and gently fold them into the meringue with a rubber spatula until no streaks of vanilla remain, being careful not to deflate the whites.
4. Using the rubber spatula, pile the meringue into the center of the circle drawn on the parchment paper and smooth it to the edges of the circle to form a rough, even disk about 1 inch tall.
5. Bake until the meringue is firm to the touch but slightly soft in the middle, about 60 minutes. Remove from the oven, place the baking sheet on a wire rack, and let cool completely. Carefully run a thin metal spatula under the meringue to loosen. Place on a platter or cake stand.

To assemble:

1. Place the cream, sugar, and vanilla in a clean bowl. With an electric or stand mixer, beat on medium-high speed until soft peaks form, about 1 ½ to 2 minutes. Using a rubber spatula, fold in the chilled lemon curd, leaving big streaks of curd and whipped cream.
2. Pile the mixture into the center of the cooled meringue and spread to the edges.
3. Top with fresh berries and serve immediately!

Reflect:

1. Why is it important that the water in the saucepan beneath the lemon curd not boil while thickening the curd?
2. Why should the mixing bowl and whisk attachment be very clean and dry before adding the egg whites?
3. The butter must be incorporated into the curd one piece at a time. Why is this necessary?
4. Why is it important to serve immediately?

Apply:

Egg whites are made up of water, protein, and small amounts of minerals and sugars. When the egg whites are beaten, air is added and the egg white protein, albumen, is denatured. Denaturation is the change of a protein's shape under stress (in this case, beating). The denatured protein coats the air bubbles and holds in the water, causing them to become stiff and stable. When an acid such as cream of tartar is added, the foam becomes even more stable and less likely to lose water (a process known as syneresis). Several factors affect the formation and stability of egg white foams, including:

- **Fat:** The addition of even a small amount of fat will interfere with the formation of a foam. Fat is present in the egg yolk, so it is very important that all of the egg yolk is separated from the egg white.
- **Salt:** Salt is added to egg white foams for flavor.
- **pH:** Addition of an acid (such as cream of tartar) will decrease the pH of the egg white foam to near the isoelectric point of the proteins. At this point, the proteins are least stable and more sensitive to denaturation. Adding an acid also increases the beating time.
- **Temperature:** An egg white foam is formed and reaches greater volume more quickly when egg whites are at room temperature.
- **Sugar:** Sugar is added during foam preparation because it creates a smooth, stable foam – one that will not collapse and drain quickly

http://www.ift.org/~media/Knowledge%20Center/Learn%20Food%20Science/Food%20Science%20Activity%20Guide/activity_bafflingbeaters.pdf

Hints: When cooking egg yolks in a curd or hollandaise sauce, the egg has to be cooked very slowly so as not to curdle the egg. This slow cooking method creates a smooth and creamy texture. Another hint is to serve the Pavlova and lemon curd immediately after plating the dessert. The Pavlova and the lemon curd have different water activities (amount of free water in a food) and you will see water migration from the curd into the Pavlova over time. Water naturally tries to equilibrate by moving from an area of moisture to a dry area and leaving the curd on top of the Pavlova for a long time will result in a soggy dessert.

Background:

The Pavlova is named for the Russian ballerina Anna Pavlova. This famous dessert of airy meringue cake topped with whipped cream was invented after her 1920s tour through Australia. Popular in both Russia and Australia, the Pavlova consists of a crisp shell base with a marshmallow-like interior. This version is topped with tangy lemon-curd whipped cream and fresh berries. Enjoy this light and elegant dessert any time of the year.

Many recipes call for egg whites or egg yolks but not the whole egg. These recipes are a great use for ingredients that might otherwise be thrown out. Egg whites can be used to make angel food cake or meringue cookies (can use the Pavlova recipe – simply leave out the cornstarch and vinegar), dropped batter by tablespoons full onto a parchment-paper lined baking sheet and bake until completely dry, about 1 hour. Turn off the oven and leave the meringues in the oven for about 20 more minutes. Egg yolks can be used to make homemade noodles, added to ricotta cheese for a lasagna filling, or in hollandaise sauce!

Recipe source: <https://www.chowhound.com/recipes/pavlova-with-lemon-curd-and-fresh-berries-29539>