

The iGEM Cookbook

As part of our iGEM 2020 collaboration we wanted to create an international iGEM Cookbook. For this collaboration, we want to highlight global foods and the role genetic engineering has played in food crops. Our goal is to compile a global cookbook of a team's favorite recipe that could be made with GMO ingredients!

The inspiration behind the iGEM Cookbook came from working in agriculture. Since A2 milk market is organic, we could not use genetically modified organisms in cows. However, we wanted to raise awareness about GMOs since these are perceived as harmful but are often found in our everyday diets. Common foods that contain GMOs:

- Papaya
- Apples
- Potatoes
- Soybeans
- Canola
- Corn
- Sugar beats

We asked some teams to choose a recipe from their country that uses at least two ingredients that have genetically modified versions around the world. Then discuss why the team chose a specific dish and what GM ingredients were used.

Team name: UPCH Peru



Recipe name: Fried chicken with potato in colorado chilli pepper stew



Fried chicken with potato in colorado chilli pepper stew

Ingredients



- ½ cup Rice
- 2 potatoes
- 1 tsp oregano
- 2 Laurel leaves
- Cumin
- A small portion of dried fungus
- ½ onion-
- 1 medium-size garlic
- A pinch of turmeric
- 1 tbsp of colorado chili pepper
- 1 tbsp tomato sauce
- Salt
- Pepper

Optional:

1 peeled carrot cut into small pieces

½ cup of pea





Fried chicken with potato in colorado chilli pepper stew

A RECIPE BY UPCH PERU

Directions

Rice preparation

Fry 1 medium-size garlic chopped in a cooking pot. Stir them until they turn golden. Add the medium-dry rice (previously extracted the starch by washing) and stir. Wait 3 minutes and add the equivalent amount of water ($\frac{1}{2}$ cup). Cover and wait until all water evaporates. After that, cook it on a low fire and let the rest of the water evaporate.

Dish preparation

Chop onion and garlic with a square form, then fry them in a cook pot. Add tomato sauce, a pinch of cumin, and colorado chili pepper. Stir until it is combined. Then add the dried fungus and two to three laurel leaves. Let it take point. Chop potatoes in medium size. Add to the cooking pot. If you want, you could add a carrot and pea. Let it cook for 20 minutes. On a frying pan, cook the chicken previously mixed with oregano, salt, pepper, turmeric, and cumin. Serve with the cooked rice and chicken with potatoes. Add as much stew you want.

Team UPCH Peru chose this recipe “because it’s easy to prepare and delicious. The genetically modified ingredient is the potato, which is commonly white yellow. However, when stewed with limo and panca chili pepper, it acquires the color it has in the picture. Centuries of selective cultivation led to the actual potato, but the most related species to this vegetable looks far different from that one. Also, there is a great variety of chili pepper types selected in various parts of our country. Some came from Amazonia. So, indeed they are genetically modified (GM) ingredients in this dish. Lastly, rice is another GM. Despite that it is not native to our country, nowadays it is part of the main plate in almost every country in the world. Even more, there are transgenic versions of it commercialized in other parts of the world.”

Want to know more about the evolutionary history of potatoes? You could read the study from Hardigan et. al. (2017) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5699086/>

Our Recipe:

Liquid Nitrogen A2 apple ice cream

We decided on this recipe because it contains a part of our project, A2 milk, and apples which are legal genetically modified foods. Since we were able to access the lab this summer, ice cream was the best treat after a long day in the lab. We had so much fun making it with our team!



LIQUID NITROGEN A2 APPLE ICE CREAM

INGREDIENTS

- 4 cups of A2 Whole Milk
- 1 vanilla bean, split
- 1 cup of sugar
- 1 teaspoon of vanilla extract
- 1 tablespoon of cinnamon
- 1 diced apple
- 3 cups liquid nitrogen
 - Warning: Handle liquid nitrogen with caution using insulated gloves and goggles. Wear protective clothing. Keep away from children.

PROCEDURE

- 01** Combine A2 whole milk, sugar, vanilla bean, and vanilla extract in a stainless steel bowl.
- 02** Using insulated gloves, safely open the liquid nitrogen unit and begin to pour into the bowl.
- 03** Mix until creamy and add your toppings, diced apples and cinnamon. Enjoy!



PREP TIME

- Prep | 15 minutes

References:

Center for Food Safety and Applied Nutrition. (n.d.). Agricultural Biotechnology. Retrieved October 27, 2020, from https://www.fda.gov/food/consumers/agricultural-biotechnology?utm_source=google