

22. Food for tomorrow?

Victoria Shevchenko

Kateryna Pylypiva

National University of Food Technologies

Introduction. Cocktails in ice spheres. Caviar made of olive oil. Disappearing transparent raviolis. Sound cool? Well these are all examples of Molecular Gastronomy. Molecular Gastronomy blends physics and chemistry to transform the tastes and textures of food. The result? New and innovative dining experiences. The term Molecular Gastronomy is commonly used to describe a style of cuisine in which chefs explore culinary possibilities by borrowing tools from the science lab and ingredients from the food industry. Formally, the term molecular gastronomy refers to the scientific discipline that studies the physical and chemical processes that occur while cooking. Molecular gastronomy seeks to investigate and explain the chemical reasons behind the transformation of ingredients, as well as the social, artistic and technical components of culinary and gastronomic phenomena.

When people hear the words molecular gastronomy or molecular cuisine for the first time they often mistakenly view it as unhealthy, synthetic, chemical, dehumanizing and unnatural. This is not surprising given that molecular gastronomy often relies on fuming flasks of liquid nitrogen, led-blinking water baths, syringes, tabletop distilleries, PH meters and shelves of food chemicals with names like carrageenan, maltodextrin and xanthan. The science lab equipment used just helps modern gastronomy cooks to do simple things like maintaining the temperature of the cooking water constant (water bath) , cooling food at extremely low temperatures fast (liquid nitrogen) or extract flavor from food (evaporator). There is still some debate out there about the healthiness of molecular gastronomy but I personally believe there are far bigger health issues in the everyday food we consume. In the end, you are not going to be eating liquid pea spheres every day anyway.

If you are not a professional chef with a fully equipped kitchen you can still enjoy molecular gastronomy at home without spending too much money. Many molecular cuisine recipes don't require special equipment or "chemicals". With as little as \$50 you can get some basic molecular gastronomy substances to start making spheres, airs and gels. Want to cook with liquid nitrogen? That gets a bit more expensive but is a lot of fun. You'll have to spend about \$500 and carefully follow some safety procedures.

Molecular Cuisine

Molecular gastronomy is a relatively new term, one that has caused much confusion and controversy. Some of the confusion comes from trying to put a modern spin on a much-older word. That word is gastronomy, which, since the 19th century, has described the art of selecting, preparing, serving and enjoying fine food. If preparing food is an art form, then it must be an activity requiring creative skill and imagination, not technical expertise. And yet gastronomy, like astronomy and agronomy, say, seems to describe a rigorous, scientific field of study.

Molecular gastronomists use special techniques, ingredients and cooking principles to encourage certain chemical reactions to occur. These reactions, in turn, produce startling new flavors and textures. One popular technique is cooking meatsous vide, a French term that means "under vacuum." Here's how it works: First, you pour water in a pan and heat it to a low temperature. The exact temperature varies depending on the type and thickness of the meat, but it never exceeds the boiling point of water (212 degrees F, 100 degrees C). For steak, the water temperature will be about 140 degrees F (60 degrees C). Next, you place your meat, along with seasonings, into a heat-safe plastic bag, seal it and place it in the hot-water bath. The meat cooks slowly in the heated water and retains its moisture. After approximately 30 minutes, you remove the meat from the bag and place it in a hot frying pan. Sear the meat briefly on each side before serving. When you cut into the meat, you will find it to be juicy, tender and delicious.

Conclusions. Molecular gastronomy makes all other cooking fads lose relevance: it is the ultimate fantasy to create by combining science and cooking. It is exciting and it has allowed for some revolutionary research and findings in the cooking world. Often considered just fancy and unnecessary showing off, at the expense of taste, it is, instead, a wider perception of cooking, which includes physics to improve the cooking outcome. The ideal cooking temperature for an egg has been discovered thanks to molecular gastronomy, for example. There are some science-aficionado chefs who have devoted a great deal of time to studying the physical and chemical mechanisms of cooking. Their kitchens become sci-fi labs as they strive to understand what lies behind gastronomy. The main objectives of molecular gastronomy are to understand in detail culinary transformations and processes, from a technical, artistic and social standpoint.

References

1. DeBevoise M. Molecular Gastronomy: Exploring the Science of Flavor.-Columbia University Press- 2006
2. en.wikipedia.org/wiki/Molecular_gastronomy
3. www.molecularrecipes.com/molecular-gastronomy

Scientific supervisor: Lidmyla Yurchuk