Futuristic Foods: What will we be eating in 30 years?

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Ever pondered what humans will be eating 30 years from now? Food scientists believe that the diet of 2050 won't be like the one we have today. There will be a decline in the red meat production and rise in the consumption of bugs.

From croissants to Doritos, from Oreo biscuits to Cinnamon Toast Crunch, the preferences for edibles has revolutionized and gotten weirder and wonderful at the same time. Dietary specialists anticipate that 30 years from now, our dietary horizon will be really enthralling and amazing. The predictions of what will we be eating after we emerge from our cryogenic slumber by 2050 ought to be fun!

Some of the interesting futuristic foods have been listed below:

1. *Bugs*

The human population is growing at an alarming rate and it is expected that by 2050, it will reach a whopping 9 billion (Ahmad, 2001). Growing pressure of doubling the food production in order to meet the increasing demand is paving way for bug-based food to feed those millions of hungry mouths. Planetary boundaries cannot be stretched more as we already utilize 70% of agricultural land to grow food, ecological systems are highly polluted and oceans are being overfished. Anticipating a hunger crisis in the coming years, it is important to think of possible solutions.

Entomophagy? Well, yes, consumption of insects is a solution to food insecurity. All that is needed is to get over our squeamishness and recognize bugs and insects just like any other food source. Already, around two billion people snack on insects as part of their regular diet and almost 1900 insect species are edible. These include beetles, bees, cockroaches, caterpillars, grasshoppers and mealworms, wasps and ants. Insects are rich in proteins and are an efficient food source. Crickets, for example, need just 1.8 kg of feed to generate 1 kg of meat, whereas bovines require 8.5 kg to generate the same quantity of meat (Van Huis, et al, 2013).

2. Artificial Lab-grown meat

Scientists and food experts anticipate artificial meat grown in vats as a way to combat greenhouse-gas emissions (GHG), overfishing and food source for a whopping 9 billion people by 2050. The meat industry is responsible for eighteen per cent of total GHG emissions (40% of methane and 65% of nitrous oxide emissions) (Koneswaran & Nierenberg, 2008), and by 2050, the global meat production is expected to increase manifolds according to Food and Agricultural Association of the United Nations (Hoffmann & Baumung, 2013). With growing population, the ecological footprint of the livestock will also grow and there is an urgent need that this impact must be cut by half to minimize the increased level of enormous harm beyond its present level.

Cultured or synthetic meat, is meat grown from in-vitro animals i.e. 'tissue engineering' technology using the cells instead of real animals. In-vitro meat has financial, health, animal care and environmental benefits over conventional meat. The aim is to produce meat without using an animal to meet the growing food demand (Goodwin & Shoulders, 2013).

3. *Farmed fish*

Over-fishing is increasingly sabotaging the stability of the global oceans, tremendously reducing the ocean's tendency to produce seafood, combat diseases, purify water from toxicity and recoil from catastrophes like climate change.

The world's stocks of seafood are expected to collapse by 2050 considering the present level of destruction caused by overfishing (Worm, 2016). With the present rate overfishing and the alarming increase in the human population, the scientists believe that farmed fish and shellfish farming is required to be increased by 133% by 2050 with an aim to meet the global fish demand (Waite et al, 2014). Sustainable practices like catch limits are predicted to increase fish quantities by 2050

To keep consuming fish at the current rate, sustainable fish farming i.e. aquaculture is needed. The reason for this is that due to overfishing the fish volume has stagnated since 1990. If we make use of the entire ocean space suitable for fish farming (Aquaculture), around 15 billion tonnes of fish can be produced per annum which is a hundred times more than what we produce every year at present. This will help us to address the fisheries crisis and possibly the world food security issues as well (Béné et al, 2015).

4. *Microalgae – The Miracle Superfood*

Scientists believe that the tiny, microscopic photosynthetic plants called microalgae are another food source that could play a critical role in feeding an increasingly expanding global population.

These tiny green critters are a rich source of protein and Omega-3 fatty (healthy) acids which, even if cannot be a complete solution to the growing hungry mouths, would at least minimize the food security crisis in the coming times. Microalgae give a natural energy kick that lasts throughout the day. They have more protein content than 20% fat ground beef, as per the USDA (Trentacoste et al, 2015).

Algal oil is utilized as a vegan alternative to fish oils. One to two grams of algal oil serving each day can remarkably elevate blood levels of Omega – 3 fatty acids (DHA and EPA). DHA from algae has also been found to be bio-equivalent to fish oil's DHA (Ryan & Symington, 2015).

After oil extraction, the left over algal biomass can be dried and converted into pellets that is utilized as fuel in industrial boilers and other power generation sources (Kightlinger et al, 2014). Microalgae act as raw materials for production of bioethanol and biodiesel transport fuels and they can produce 2,000 - 5,000 gallons of biofuels per acre/year (Ghasemi et al, 2012).

Algae also have the ability to harvest the sun's energy and turn it into oils, essential proteins, and carbohydrates. They are very important organisms as they provide nearly all oxygen that we need to breathe. Millions of humans across the world consume seaweed especially in countries like Japan, Chile, South Africa, Belize and England. The nutritive components of seaweed are being used in many smoothies, sweets, meat products and desserts (Chacón-Lee & González-Mariño, 2010).

5. 3D printed food

3D printed food is a process to convert alternative ingredients like vitamins and carbohydrates from microalgae, into real edible products. The phenomenon is anticipated as futuristic, healthy, creative, efficient and sustainable. The science of 3D printing has an advantage of creating customized and flavorful foods without having to sacrifice the nutritional value of the food. Food printing at home can also reduce the waste associated with the food industry. 3D printing is seen to address the 4 pillars of food security i.e. Availability, Access, Utilization and Stability (Napoli et al, 2011).

3D Printed Food is predicted to be a solution to address hunger & nutrition issues Lingering in hunger, poverty and disaster-hit regions. Since it involves minimum resources, it is seen as healthy for the environment with its reduced ecological 'footprint' (Lin, 2015).

6. Genetically Modified Foods

Also known as Genetically Engineered Foods, GM Foods is basically a food item which is derived from a genetically modified organism. The process involves Recombinant DNA technology, that is meant to improve the food-yield both qualitatively and quantitatively – by blending genes of different organisms.

The human population already consumes a lot of GM foods like corn, potatoes, canola, soybeans, sugar beets, and other veggies. Genetic modification of crops is a wonderful method to enhance crop yield without using harmful pesticides and chemical fertilizers. The technique involves manipulation of the crop DNA to insert several beneficial characteristics into the genes of that particular crop, like improved yield, pest resistance, improved quality and disease resistance. With increase in the human population, food

insecurity is seen as a major global threat. However, GM Foods are one of the powerful ways to increase our food supply and are predicted to be one of the key futuristic foods by 2050 (Azadi & Ho, 2010).

7. Fake fish

If meat can be grown in a lab, why not conjure up some artificial fish too. For e.g., red algae grown in a pot is given a shape of big shrimp. Just like the synthetic meat, fake fish is bringing a revolution in the gastronomical choices of the people who are vegetarian and those threatened by mercury poisoning, overfishing and environmental impacts. In the not so distant future, fake fish chips will be seen being encased in 3D printed newspapers (Thaler & Shiffman, 2015).

Two decades from now, depending on the extremity of the climate changes and environmental status, we will either be clinging to our current diet or will need to embrace the futuristic foods discussed above.

About the Author

Dr Amita Fotedar is an experienced Research Consultant with a demonstrated history of working in elite Research Institutes like the United Nations Development Programme, Istanbul, Turkey, Indian Institute of Science, Bangalore, India and International Water Management Institute, Colombo, Sri Lanka. Skilled in Biological Sciences, Natural Resources, Water Resource Management, and Renewable Energy, she has a PhD in Environmental Sciences from the University of Jammu, India. Apart from her PhD, she has a Post Graduate Diploma in International Studies from International Pacific University, New Zealand Campus, and has also been rewarded a certification in Climate Studies from Harvard University. She is a recipient of an Academic Excellence Award from IPU, New Zealand. At present she is pursuing specialization (Micro-Masters) in Sustainable Energy from The University of Queensland, Australia.

She is working as a Research Consultant for a New Zealand based Sustainability and Environmental Services Entity and is also a member of the Environmental Peacebuilding Association at SDG Academy, offering mentorship (a collaborative network of academic and research institutions under the auspices of UN Secretary-General). She has around 30 national and international publications to her credit.

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