

Food Science and Technology to Improving the Food Systems

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Description

For centuries, inhabitants of cold climates have used the natural winter frosts as a preservation approach to protect foods from microbial or enzymatic deterioration. Following early experience with ice making in the 19th century, technology developed rapidly and by the end of the 19th century, cold air freezing plants were being used to produce frozen poultry in Europe, which was being traded between countries. In the 1920s, Clarence Birdseye developed flash freezing of food, which produced a product of much higher quality; this technology was investigated by the military during World War II. As an evolving society embraced convenience and variety, and the food industry recognized financial benefits such as enhanced capacity and extended shelf life, freezing technologies were increasingly embraced in the decades that followed. This has led to innovations such as frozen meals available in groceries to the recent emergence of the food-on-demand businesses that provide door-to-door delivery of ingredients and products by overnight shipment.

Discussion

Food fortification or enrichment can be defined as the intentional process of adding micronutrients to food. A historical example is the addition of iodine to salt, which began in the 1920s because the lack of natural iodine was resulting in a high prevalence of goiter in the population. Among the many examples of improving health via fortification is the U.S. mandatory fortification of all enriched grain products with folic acid, which has prevented thousands of neural tube defect incidences per year. Developments in nanotechnology, specifically nanoencapsulate allow for even greater individualization in consumer choice, preference, and demand. Attaining a food supply that provides safe, healthy, appealing, and affordable foods is the shared responsibility of food and allied industries, local, state,

and federal governments, and researchers and educators in academic institutions, along with consumers through their food choices and practices. Most of the necessary research and development (R&D) work to launch new commercial products is naturally initiated and conducted by the private sector. However, investigating overarching concepts in the food sciences, and solving universal, crosscutting problems, is frequently tackled with basic and applied scientific research that is conducted at public and private universities and in government laboratories. Although different stakeholder groups contribute to the funding and intellectual enterprise of solution, are providing means by which to improve our fortification. A classic example of early up cycling was the utilization of sweet whey, a byproduct of cheese making, as an ingredient in various food products. Considered a waste by early cheese producers, whey was pumped into rivers and streams, which created dead zones in the ecosystem because of overgrowth of algae. When this practice was banned, whey began to be used in various capacities, first as animal feed, then as a filler, and eventually as an ingredient of "health food" products. In addition, cream skimmed from whey was used to make whey butter, an ingredient in butter-flavored food.

Conclusion

Up cycling has gained significance among food manufacturers not only as a lucrative process but more importantly as a part of their resource efficiency and sustainability management plans. Other historical successes of up cycling include the use of fishing by catch to produce value-added products such as surimi. A modern example of the need for up cycling is the mounting quantities of acid whey being produced as a result of the recent popularity of Greek-style yogurt. Researchers are investigating ways to up cycle this new food processing by-product.

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