

COMMON ADDITIVES IN FOOD PRODUCTION AND THEIR DISRUPTIVE EFFECTS ON HUMAN BODY

Abstract: Living in modern era certainly has its positive impact on society. However, one of the most innovative transitions is in the food processing additives. In order to provide more food with "better" qualities for consumers, a lot of food additives like casein, MSG, and aspartame are put into food production. Unfortunately, they not only taste good, but are also highly addictive. This paper aims to review some of the negative effects of the most common food additives on the market.

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1. Introduction

Fast food is everywhere. It is cheap and tastes good. By definition, fast food is any food that is prepared and served quickly for immediate consumption. Due to its ingredients, like salt, sugar, and fat, it is known to be very unhealthy and highly addictive. As a consequence to the uncontrollable eating and the dramatically increased caloric intake, people began getting obese. To answer the growing health crisis, a lot of attention was focused on reducing saturated fat and sugar in people's diets. The processed food industry decided to give people what they want by adding a lot of chemicals to the meals. There are several thousand different food chemicals used in food supply today.

One of the most dangerous food chemicals is aspartame. The additive, registered with the E951 code, is a widely used sweetener. It appears in many foods, disguised as different trade names – "NutraSweet", "Equal", "Spoonful", "Sweetly" and more. Statistics show that it is officially used in over five thousand products and holds one quarter of the artificial sweeteners market. The number of foods and beverages in which it is used is steadily increasing despite its revelations about its dangerous effects [1], [6], [8].

2. The nature of the problem

Fast food has big amount of fat. Fat molecules give us a lot of energy and they are very important for our bodies because that energy can be stored for later, but we eat too much of it. There are researches proving that when we eat fat a pleasure sensation is being produced in the brain, which is very similar to the pleasure sensation of heroin and cocaine. The result is similar – the more we eat it, the more we want it (Fig. 1).

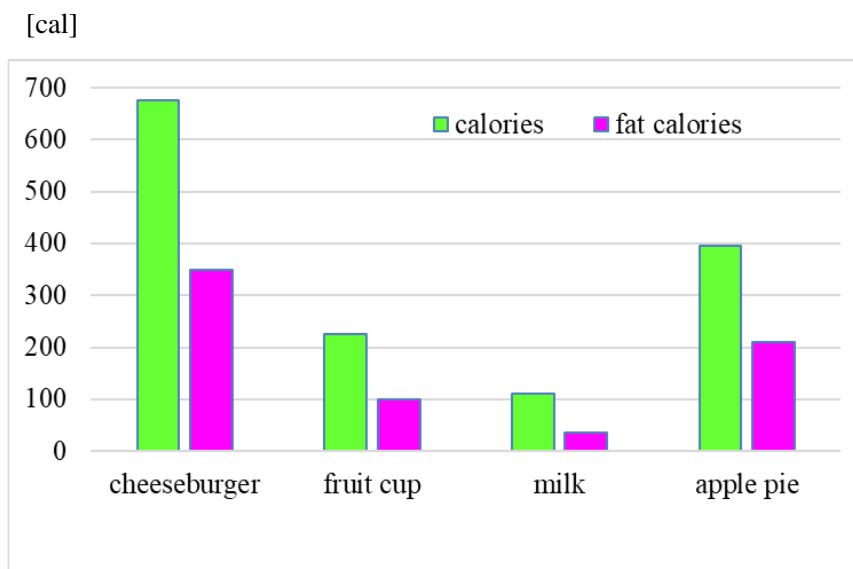


Fig. 1. Calories from fast food

This chart shows the how much calories we can find in a cheeseburger, a fruit cup, some milk and an apple pie and how much of these calories are from fat.

Sugar-rich foods are also providing us with quick energy but researches show that sugar affects our brains and stimulates the pleasure center. Just like fat, sugar acts on our brains like cocaine does. Eating too much sugar can lead to diabetes, cardiovascular disease, and obesity. Overconsumption may cause depression. Sugar is added to almost every fast food, including sauces, dressings and even bread.

Fast food production utilizes a mix of fat, sugar and salt (sodium). The salt does not provide us with energy but it supplies us with electrolytes. It stimulates the pleasure center in the brain too and animal studies are showing that it leads to an addiction, just like a drug. One fast food meal can include upwards of 1,300 milligrams of sodium — more than half of your daily recommended intake. Consuming foods high on sodium can cause high blood pressure, diabetes and kidney disease [7].

Casein is another additive which is often used in making cheese. Milk and cheese naturally contain casein which is a protein, but the manufacturers concentrate it in cheese so it tastes better. Sometimes French fries and milk shakes also contain casein. The main food uses of casein are for rapid dispersion powders to be mixed with water, ranging from coffee creamers to instant cream soups, coffee or cocoa powder drinks, and similar. During digestion casein breaks down into casomorphins. These compounds are very similar to heroin and gives us a feeling of relaxation.

Monosodium Glutamate or MSG is often used in Chinese takeout food. There is not much evidence for MSG being addictive but many restaurants have stopped using it. But it is still used in fast food to improve its taste, despite claims it can lead to brain damage, like the use of cocaine and methamphetamine.

We often see foods and beverages with sign “no sugar”. That almost always means they contain artificial sweeteners like Aspartame, saccharin, and sucralose. They are not diet-friendly, actually they are worse than sugar. There are studies showing that these sweeteners trick the brain to forget that sweetness means more calories and we eat more and more sweet. Aspartame alone is proven to be highly popular addictive ingredient, with people consuming large quantities of soda drinks on a daily basis, not realizing the growing negative benefits they receive. Aspartame usage also raises the blood phenylalanine levels, which leads to lower serotonin levels and depression. The problem is very common at school messrooms. Each country has its own restrictions to avoid certain food components. This is a big issue in the Republic of Bulgaria. Obesity among young people is caused by such fast foods with addictive ingredients [3], [5].

3. Production and distribution of addictive foods

The process of food supply is shown in Fig. 2. This illustrates the core components of the modern food supply chain. The food is provided and produced by farmers, fishers and ranchers. They sell their goods to first line handlers. They store, aggregate and provide initial processing of the commodities before shipping them to processing and manufacturing sectors or wholesalers. Food processing and manufacturing includes meat packers, bakeries, and consumer product goods companies. They process and pack the foods. The wholesalers are companies that purchase and store products in warehouses and then sell and distribute them. A logistics firm does not own the food products, it is only being paid to provide service of logistical distribution and inventory coordination. The retail food sector includes convenience stores, grocery stores, vending machines and other. Individual consumer buys these food products for home consumption. The food service sector includes fast-food outlets, restaurants, eating and drinking establishments and institutional cafeterias where an individual consumer can purchase food and having that food prepared and served. Consumers represent the final actors.

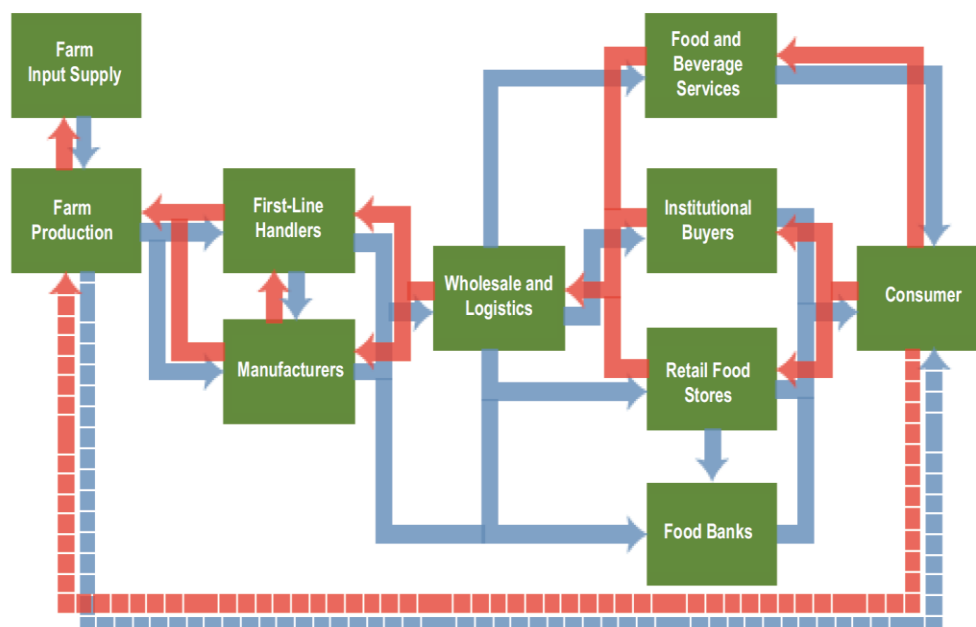


Fig. 2. Conceptual model of a food supply chain

Main element of logistics services is the provision of goods and services to buyers, and goods such as food with high content of addictive ingredients enjoy high popularity and are readily available to the consumer. Modern logistics is defined as a set of activities for managing the movement of material and accompanying flows in space and time. The pursuit for continuous improvement of the efficiency of the production and economic activity has caused significant changes in the organization of the supply lines between the companies. New methods and technologies based on logistic approach are constantly being developed and widely used. The application of the logistics approach and the development of logistics integrates and directly links all operations and activities in the planning of production and business activities, the supply of the necessary resources, the production of goods and services, the storage commodities, distribution and deliveries to the user.

Intelligent control systems can be used in fast food logistics. These include two subsystems - product delivery and distribution of finished products. In the first subsystem, a number of delivery conditions, such as the manufacturer's wholesale price and the costs that will arise after delivery, have been met. The second subsystem is responsible for the conditions under which fast food will be delivered to the end user, how they will become addicted to this food after consumption. Centralized, the two subsystems are integrated into a smart system that follows the financial nature and does not take into consideration the health of fast-food consumers [2], [4], [9], [10].

4. Conclusion

Fast food industry is growing and this means that everyone should think more about their health and to decide for themselves whether they prefer buying some cheap food which can cause many health issues instead of preparing their own food. It is very convenient sometimes to just order and eat fast and for a small price but we should care more about our health and our bodies.

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