

The Importance of Food Safety in Disasters - A Glance at the Recent Flood in Iran (July 2022)

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Dear Editor

Regardless of the type of disaster, food safety is always a major concern in such incidents, but appropriate measures can be taken to minimize damages and optimize the recovery process. Food and water, which are vital to life, must be addressed before disaster strikes. Therefore, people who live in vulnerable areas should store adequate quantities of non-perishable food and water at least a 3-day supply at all times in a safe corner of the house. It is better to keep them cool, dry, and dark.^{1,2}

A number of principles should be observed during disasters, such as food inspection, deciding whether to consume or throw away leftover food and water in critical situations, kitchen hygiene, provision of food aid and on-site temporary cooking facilities, response to food-related diseases, and community training on food and water preparation and food-borne diseases. Therefore, a complete and proper preparation before the disaster can protect society during it.³

During or after natural disasters, food in affected areas may become contaminated with microbiological and other agents. As a result, the community is exposed to the risk of foodborne diseases. A sustainable food system by taking into account economic, social and environmental factors ensures food security and nutrition for all members of society. Considering that high-carbohydrate

foods have a longer shelf life compared to fresh foods, they can be used in post-disaster situations to provide energy to survivors. Essential foods, while having a variety of food, must be healthy and safe and have proper packaging, and it is important to consider the needs of the entire family, including infants, the elderly, and those with special diseases that require a special diet. The nutritional sources of disaster survivors must meet their physical and psychological needs until they can return to their normal lives.⁴

Considering the recent flood in Iran, addressing the issue of food safety can be very helpful. Out of a total of 33 provinces of Iran in July 2022, approximately 24 provinces were flooded and a total of 93 people died. Flood affected the food production, distribution and consumption, thus threatened the nutrition supply of people involved in the crisis area. Therefore, in the early hours after the flood, essential items such as drinking water and food were sent to these areas.

Dates are among carbohydrate-rich foods with hygroscopic properties, which are a good source of antioxidants and can provide energy for disaster survivors. Dates contain soluble and insoluble fiber, vitamin B complex, vitamin C, and folate. This desirable fruit is cultivated in arid and semi-arid regions, especially in South Africa and West Asian countries such as Iran.

Various materials and technologies are used to reduce date waste and increase its storage time for use in natural disasters. One of these methods is modified atmosphere packaging (MAP), which affects the shelf life, quality, and rheological properties of food and is very useful in meeting food security goals. This type of packaging can be useful by maintaining the quality characteristics and reducing the presence of molds. Food packages in disaster situations should be consumed without cooking. In addition, food packaging containers should be able to be heated easily without changing the taste of the food. The appropriate selection of packaging materials for hygroscopic food is one of the most important prerequisites for increasing food safety in natural disasters.⁵

All dehydrated foods are hygroscopic and tend to absorb water vapor from their environment. When hygroscopic foods reach equilibrium with the environment where the water vapor pressure gradient between the foods and the environment becomes nearly zero. Since hygroscopic food products are in equilibrium at high humidity, so, this phenomenon has destructive consequences for food crops, especially in humid climates. Hence, safe storage of food products for a certain period of time is associated with a high moisture barrier and risk. However, if a food product is stored with high moisture, it provides a suitable environment for the growth of molds and insects.^{2,6}

Research has shown that low-density polyethylene, polypropylene, and 2- or 3-layer packaging materials can extend the shelf life of hygroscopic foods from 12 to 42 weeks. According to the definition of food systems provided by the Food and Agriculture Organization (FAO), the global research and development trend is towards the use of renewable and environmentally friendly packaging materials. Recent research in the food packaging industry has introduced starch as one of the important sources in the production of biodegradable films. Therefore, the correct use of this type of packaging can increase the shelf life of food supplied in disasters.^{2,7}

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Competing interests

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Abbreviations

Modified Atmosphere Packaging: MAP;
Food and Agriculture Organization: FAO.

Authors' contributions

The authors read and approved the final manuscript. The authors take responsibility for the integrity and accuracy of the data.

Availability of data and materials

The data used in this study are available from the corresponding author on request.

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None.

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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