

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 crucial consideration during such events. However, by taking appropriate measures, damages can be minimized and the recovery process optimized. Food and water, which are essential for survival, must be addressed before a disaster strikes. Therefore, individuals living in vulnerable areas should maintain an adequate supply of non-perishable food and water, ideally stored in a safe location away from home, with a minimum three-day supply at all times. It is advisable to keep these items cool, dry, and protected from light.^{1,2}

A number of principles should be observed during disasters, including food inspection, determining whether to consume or discard leftover food and water in critical situations, maintaining kitchen hygiene, providing food aid and establishing on-site temporary cooking facilities, responding to food-related diseases, and conducting community training on food and water preparation and food-borne diseases. Proper preparation beforehand can protect society during these events.³

During or after natural disasters, food in affected areas may become contaminated with microbial and other agents. As a result, the community is exposed to the risk of foodborne diseases. A sustainable food system that

considers 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 offering a variety of options, must be healthy and safe and have proper packaging. 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 floods in Iran, addressing the issue of food safety can be very helpful. In July 2022, about 24 provinces in Iran were afflicted by flooding, resulting in the deaths of 93 people. The floods also impacted food production, distribution, and consumption, threatening the nutritional supply of those in the affected areas. In the immediate aftermath of the floods, essential items such as drinking water and food were distributed to these areas.

Dates are among the carbohydrate-rich foods with hydrophilic 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 techniques and materials are used to minimize waste and extend the storage duration of this fruit for usage during natural disasters. One method is modified atmosphere packaging (MAP), which influences the shelf life, quality, and viscoelasticity properties of food and plays an essential role in achieving food security objectives. MAP can preserve the characteristic traits while reducing the growth of mold. Disaster relief supplies must contain uncooked food packages. Additionally, food packaging vessels must be heated conveniently without altering flavor. Selecting suitable packaging materials for hygroscopic food is crucial for enhancing food safety during natural catastrophes.⁵

All dehydrated foods are hygroscopic and tend to absorb water vapor from their environment. When hygroscopic foods reach equilibrium with their environment, the water vapor pressure gradient between the food and the environment becomes nearly zero. Since hygroscopic food products are in equilibrium at high humidity, this phenomenon has destructive consequences for food crops, especially in humid climates. Therefore, the safe storage of food products for a certain period of time requires a high moisture barrier and poses a risk. However, if a food product is stored with high moisture, it creates a suitable environment for the growth of mold 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 current global research and development trend is toward the use of renewable and environmentally friendly packaging materials. Recent research in the food packaging industry has highlighted starch as an important source for producing biodegradable films. As a result, proper usage of these types of packaging can significantly increase the shelf life of food supplies during emergencies.^{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.

Ethics approval and consent to participate

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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