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Editorial

COVID-19 Pandemic and Food Safety Concerns: The Impact of Extra-Heating on Chemical Toxins

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This editorial letter aims at emphasizing the significant issue of food safety concerns admist the COVID-19 pandemic, particularly focusing on the effect of extra-heating on the production of chemical toxins. The unprecedented outbreak of COVID-19 has prompted substantial global health concerns since it emerged in December 2019 (Shahgolzari et al., 2021). As its effects continue to evolve, it is vital to address potential risks related to alterations in food preparation habits and the consequent production of chemical toxins.

Coronaviruses, containing COVID-19, are widely recognized to be transmitted primarily by respiratory droplets and direct contact with infected individuals. However, concerns regarding the potential spread of the virus through food and food packaging have resulted in increased attention on food safety practices during the pandemic. Although there is currently no evidence of food as a source of COVID-19 transmission, precautions during food shopping are still suggested to impede viral transmission (Duda-Chodak et al., 2020; Han et al., 2021).

In the light of the pandemic, individuals have adjusted their lifestyles and behaviors, involving alterations in food preparation practices to ensure food safety (Kemper et al., 2023). Therefore, overheating of food, either at high temperatures or for prolonged periods, has become an emerging concern (Norouzbeigi et al., 2021). Individuals are advised by health organization to heat food prior to consumption, which has caused alterations in the consumption patterns and an increase in the use of fried, canned, as well as frozen foods (Ngoc and Kriengsinyos, 2021).

Even though heating food is regarded as an essential food safety procedure, overheating can result in the production of harmful chemical toxins. Toxic materials including Polycyclic Aromatic Hydrocarbons (PAHs), Heterocyclic Aromatic Amines (HAAs) as well as acrylamide can be formed by the Millard reaction, which occurs during high-temperature cooking (above 150 °C), particularly of meat and bakery products (Cao et al., 2020).

PAHs are commonly produced by applying intense heat treatments including grilling, broiling, frying, barbecuing, toasting, roasting meat a well as other food products. These compounds have been distributed as carcinogens and high concentrations have been reported in foods cooked under extreme heat conditions. Identically, various types of HAAs have been identified as possible human carcinogens and are formed as high-protein foods are exposed to high temperatures. In contrast, acrylamide is predominantly presented in starchy foods cooked above 120 °C and has been identified as a probable human carcinogen (Antunes-Rohling et al., 2018; Mogol and Gökmen, 2016).

It is essential to enhance awareness about the potential

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risks of over-heating food during the pandemic. Even though food safety remains a remarkable concern, individuals need to consider the adequate time and temperature for reheating or preparing food to limit the formation of chemical toxins. Additionally, recognizing alterations in aroma and color during cooking can further inform consumers about the production of these toxins and assist to prevent their further development.

In conclusion, the exceptional circumstances of the pandemic have caused an increased focus on food safety practices, even though COVID-19 is not considered as a food-borne disease. Overheating of food may inadvertently contribute to the formation of chemically hazardous substances due to fears of the virus. To minimize exposure to harmful chemical toxins, it should be ensured that individuals perceive the potential risks and adhere to appropriate heating guidelines. Promoting education and awareness can protect public health during and beyond the COVID-19 crisis.

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