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FOOD SAFETY IN PANDEMIC TIMES: COVID-19

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ABSTRACT

Food directly influences consumers' life quality. Therefore, in order to guarantee food quality and safety, it is necessary to develop better control methods for raw material, processing, transport, marketing and preparation of food. Once contaminated by microorganisms, food can promote the occurrence of diseases, generating an impact on public health. Since the emergence of COVID-19, the role of food in its transmission and dissemination among humans has been questioned. Despite the possible correlation of the disease with an animal source, there is still no precise information on the origin and transmission of the pathogen. Most infections are respiratory and can cause mild conditions up to acute severe respiratory syndrome, the main symptoms being fever, cough and difficulty to breath. There are no evidences that SARS-CoV-2 is carried by food or packaging. Thus, probably, or the virus is transmitted between people by secretions or indirectly by contaminated surfaces. Despite the lack of information on the potential risk of food consumed, avoid the consumption of uninspected, raw or undercooked food and food-related services must prioritize hygiene standards, a risk of avoiding cross-contamination.

Keywords: good manufacturing practices; hygienic-sanitary food control; coronavirus; foodborne diseases.

INTRODUCTION

Food contributes significantly to human health. However, once contaminated, it can be responsible for the transmission of diseases, causing an impact on public health (BOSH et al., 2018; BRASIL, 2019). To ensure the quality and safety of food products for consumers, it is necessary to develop better control measures for raw material, and during processing, storage, transportation, marketing and preparation of food. In this way, the responsibility for ensuring food quality and safety can be shared between industry, commerce and indirectly between consumers (MELO et al., 2018). Eating disorders can be a consequence of failure in the processing and / or handling of products. Foodborne illnesses are usually infectious or toxic in nature and caused by bacteria, viruses, parasites, príons or chemical substances entering the body through contaminated food or water. The foodborne pathogens can cause severe diarrhoea and vomiting, or debilitating infections including kidney and liver problems and meningitis (AHMED et al., 2014; BRASIL, 2019).

To avoid the risk of spreading foodborne pathogens, hygienic-sanitary control must be guaranteed during product processing as well as marketing and consumption, ensuring

procedures such as hand and utensil hygiene, in order to avoid cross-contamination, as well as food hygiene, if possible (BOSH et al., 2018). Raw or undercooked products offer a higher risk of microbiological contamination, therefore, they should be avoided. According to Yugo and Meng (2013) and Melo et al. (2018), it is recommended to heat food at high temperatures aiming the elimination of pathogens.

At the moment, despite initial reports of the disease, there is no evidence that food is a likely source or route of transmission of the SARS-CoV-2. To prevent the spread of COVID-19, it is necessary to adopt preventive measures by the food industries in different sectors such as production, storage, distribution, marketing and consumption (BRASIL, 2020; BUTLER and BARRIENTOS, 2020).

DISCUSSION

Foodborne diseases

Foodborne diseases are one of the biggest public health problems in the world today. Although these diseases are often attributed to bacteria, viruses have been identified as potential agents in food outbreaks. Food, once contaminated, acts as a vehicle for pathogens, promoting the occurrence of infections (BOSH et al., 2016).

To date, several food outbreaks caused by viruses have been described worldwide. Norovirus and hepatitis A and E viruses are the most prevalent, however, other agents such as enterovirus, sapovirus, rotavirus, astrovirus, adenovirus and hepatitis E virus, have also been associated with food and waterborne illnesses (AHMED et al., 2014; KAMAR et al., 2014; TODD and GRIEG, 2015).

In these cases, symptoms were observed ranging from mild diarrhea to a severe occurrence of neural diseases, flaccid paralysis, rare frames myocarditis, hemorrhagic fever and respiratory problems (WENZEL and ALLERBERGER, 2014; PETRIK et al, 2016).

According to the survey released by the Secretariat of Health Surveillance (BRAZIL, 2019) the main etiological agents involved in 2,030 cases of food outbreaks between the years 2009 and 2018 were *Escherichia coli* (24%), *Salmonella* sp. (11.2%), *Staphylococcus aureus* (9.5%), coliforms (6.5%), Norovirus (3.6%), Rotavirus (3.3%), *Shigella* spp. (3.0%), *Bacillus cereus* (2.6%), *Clostridium perfringens* (1.7%) and the Hepatitis A virus (1.2%).

Only in 2018, 597 foodborne outbreaks were reported, with 8,406 patients, 916 hospitalizations and 9 deaths. Among the etiologic agents identified as responsible for the outbreaks (120 outbreaks), *Escherichia coli* (31.7% / 38 outbreaks) was found to be the most common pathogen, followed by Norovirus (13.3% / 16 outbreaks), while, the water (28.9%/ 64 outbreaks) and mixed foods (23.9%/ 53 outbreaks) were associated most commonly with outbreaks in 221 cases (BRAZIL, 2019).

According to notifications from previous years, households (32.6%/195 outbreaks) continued to be the place of occurrence most associated with food outbreaks, which demonstrates the need to adopt hygiene principles and good handling practices in the preparation and ingestion of food (BRAZIL, 2019).

Coronavírus

Coronaviruses (CoVs) belong to the Coronaviridae family, Nidovirales order. They are formed by a simple RNA + ribbon and received their name because they present several spicules in a crown shape around their lipid envelope (PRABAKARAN et al., 2004; LU et al., 2020).

These microorganisms belong to a large viral family closely related to infection in vertebrates, including humans, birds, bats, snakes, rodents, camels, felids and other wild animals (Yang et al, 2020). CoV infections are common in animals and humans, with some strains having zoonotic potential (READ et al., 2020).

In humans, most infections caused by CoVs are mainly respiratory, and can cause mild conditions such as a common cold, as well as respiratory syndromes like the Severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). In this sense, SARS and MERS have occured in the years 2002 and 2012, respectively (WANG et al., 2020).

The novel coronavirus 2019 (2019-nCoV), now referred to as SARS-CoV-2, has a great similarity to exotic SARS-like coronavirus (2002-2003), but is a new variant. Evidence points that SARS-CoV-2 originates from an animal source, given the genetic similarity of other CoVs circulating in populations of Rhinolophus bats. However, according to the World Health Organization and the World Organization for Animal Health, there is no precise information on the origin and transmission of the new coronavirus (OIE, 2020; WHO, 2020).

Considering the first reports of the disease in 2019, there is a possible epidemiological link between the cases diagnosed at the epicenter of the epidemic and a public market for seafood and live animals, located in the Chinese city of Wuhan, capital of the province of Hubei, China. It is believed that the initial transmission of the virus to humans is related to the circulation of people in exotic animals markets and also the habit of consuming meat prepared in these places (CUI et al., 2019; CHEN et al., 2020; YANG et al., 2020).

However, these are only speculations, given the lack of sufficient scientific evidence to identify the source or reservoir of the virus or to explain the original route of transmission to humans (OIE, 2020; WHO, 2020).

So far, several investigations are underway in order to identify a possible animal source, including perhaps the participation of several species, and who knows if a potential reservoir of the virus is established (OIE, 2020).

As for viral transmission between humans, since this is the predominant form of COVID-19, it is believed that the main form is direct, by the spread of viral particles through the body fluids of infected individuals. Another possibility of infection would be indirect transmission, via contact with contaminated surfaces and objects (GUAN et al., 2020; LI et al., 2020).

The main symptoms of this respiratory syndrome are fever, cough and difficulty to breath, starting 2-14 days after exposure. It is not known for sure how long the virus is viable on a surface, but it is estimated that it can persist for hours or even several days, considering the differences between the type of surface, temperature and humidity of the environment, requiring the cleaning of surfaces with disinfectants (HUANG et al., 2020; KAMPF et al., 2020).

After all, can the new coronavirus (SARS-CoV-2) be carried by food?

SARS-CoV-2 appears to be a zoonotic infection, considering the genetic analysis that shows a great similarity to exotic SARS-like coronavirus, but the origin is uncertain. According to the World Health Organization (WHO, 2020), there is no proven evidence that the new coronavirus can be carried by food or its packaging, based on the assessment of other epidemics caused by viruses of the same family. In this way, the agent has probably been transmitted between people.

In view of this potential transmission, it is noted that behaviors and eating habits can directly or indirectly influence viral transmission, such as the circulation of people in public places, the work environment, sports and leisure (USDA, 2020).

Despite the lack of information regarding the potential risk that food offers, especially products of animal origin, the consumption of uninspected, raw or undercooked food should be avoided. The handling of raw meat, milk and remains must be careful, in order to avoid cross-contamination with raw foods, respecting good food hygiene practice (CEUPPENS et al., 2014; BUTLER and BARRIENTOS, 2020).

The sanitary inspection of products of animal origin, through the work of the veterinarian, aims to promote public health and food safety by controlling the slaughter of animals and their products, by obtaining milk and milk products, eggs and their derivatives, fish and by-products and honey and bee products (CARVALHO et al., 2017). The veterinarian contributes to the guarantee of animal and human health, by ensuring food safety, zoonoses control and environmental protection, aiming at one health (CONTI and RABINOWITZ, 2011; SANTOS et al., 2016). In addition, professionals contribute to the adoption of measures that guarantee the quality and safety of food, through hygienic-sanitary control of processes and market (GOMES, 2017).

Nowadays, the food industries and food services must guarantee good manufacturing practices avoiding cross contamination, by performing the hygiene of utensils, equipment, environment and personal hygiene. The control strategies should be established for food hygiene, proper cooking, storage and marketing in harmless places (BRASIL, 2020).

At this time, everyone involved in the food production chain, as well as consumers, must pay attention to hygiene practices in order to guarantee the quality and safety of food products.

CONCLUSIONS

Due to the current scenario, every preventive measure should be adopted for food safety. Hygiene procedures for hands, food, utensils and the environment can reduce contamination and transmission of the pathogen, in addition to consumption of inspected food.

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