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Editorial

COVID In Food Is It Possible to Spread It?

Santiago Pablo Baggini*

Docent e-learning, ESTRATEGIA (Ecuador), Argentina

***Corresponding Author:** Santiago Pablo Baggini, Docent e-learning, ESTRATEGIA (Ecuador), Argentina.

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Undoubtedly, the year 2020 will be marked by fire as the year of the COVID-19 pandemic, a situation that, on the other hand, we are still suffering and we do not foresee that it can conclude at least in the short term since we outlined these lines. To assume that everything is known about Sars-Cov 2 [1] (Severe acute respiratory syndrome - coronavirus 2) is a fallacy, since every day, we know less for sure than we do not know about it.

The origin of the pathogen is not yet known for sure, or at least there are more suspicions than certainty with reference to its explosive appearance in world scientific opinion. Likewise, the World Health Organization seems to indicate to us, albeit subliminally, that more is unknown than is known about COVID-19. Before continuing the analysis, I want to be allowed to do a little knowledge exercise about viruses [2].

Viruses have coexisted with organisms on the planet for about 200 million years, but the scientific study of these intracellular parasitic macromolecules is recent. Only in the 19th century, through clinical and pathological studies, they were recognized as etiological agents of specific diseases. Shortly after, beginning in the middle of the last century, the use of bacteriophages as a model constituted a great step towards the understanding of viral replication and the new histological techniques, the electron microscope and immunohistochemistry, provided a more accurate framework in the study of viruses. The information obtained with the use of crystallography allowed us to visualize the viral structure down to an atomic level.

With these volumes of information, more sophisticated methods were developed, such as the polymerase chain reaction, which detects viral genomes with great sensitivity and specificity, and finally, it has the ability to introduce genetic material into viral genomes for design of vaccines, viral vectors and gene therapy. The classification of viruses is more consistent if you have the nucleotide sequences of their genome. Current systems are also based on: nucleic acid (type and structure), symmetry of the viral capsid and lipid envelope [3-4]. Consider the viral particle as a delivery system, made up of components that allow it to survive, and the "merchandise" (unwanted) formed by the viral genome plus the enzymes necessary to initiate replication. The receptor is necessarily an intact cell that can synthesize hundreds or thousands of virions: the virus directs this synthesis.

These organisms, so dynamic, efficient, and so dependent, are measured in nanometers (1/1000 micrometer), most of them ranging in size between 20 and 300 nanometers. Viral particles are completely dependent on the host cell, prokaryotic or eukaryotic. They cannot reproduce or amplify the information in their genomes, so we could call them "genetic parasites", since they have the enzymes and information required to program infected cells in order to synthesize the components necessary for their replication. The basic components of a virus are: Structural proteins, which make up the viral particle, and Non-structural proteins, such as enzymes. Capsid, the outer covering, made up of capsomeres, which are polypeptide threads interwoven in such a way that they resemble "balls of wool" [5].

This protection is also useful to the virus in penetrating cells. Some viruses have a lipid envelope whose origin is the same plasma membrane of the host cell, and which is acquired when the new viral particles leave the cell in a budding process. Capsomeres pass through this envelope as three-dimensional projections of various shapes and with different functions. The shape of the nucleocapsid determines the different kinds of symmetry of viruses. There are viruses with helical symmetry, in which the virus is seen as a spiral

with nucleic acid in the central axis. Another type of symmetry is icosahedral. In this geometric shape, the viral particle has 20 faces with 12 angles. Viruses have only one type of nucleic acid. There are viral families of DNA and families that contain RNA. In the case of DNA viruses, they are not directly responsible for protein synthesis. There are DNA viruses that can block self-destruction [6].

Another possibility, also related to some viruses, is their ability to produce malignant changes in parasitized cells. Transformed cells suffer several alterations: increase in the multiplication rate, disorderly growth, indefinite spread, and presence of tumor antigens on their surface. The main known oncogenic viruses are: papillomavirus, hepatitis B virus and Epstein Barr virus, among the DNA viruses, and the retrovirus within RNA viruses. In the course of the so-called technological age, humans, self-described as the greatest predator on the planet, have interacted with different ecosystems in complex, aggressive and irresponsible ways. Consequently, thousands of pathogenic organisms, associated with other species, are in the process of adaptation to the modifications included by man. The sequelae involve significant changes in the geographic distribution and epidemiology of infectious diseases.

Emerging infectious diseases are pathologies that have appeared during the last two decades in different geographical locations, displacing those that were considered a greater risk from a public health point of view, and those that represent a future threat. Among the diseases they produce are: gastrointestinal infections, epidemic keratoconjunctivitis, pharyngoconjunctival fever, pneumonia in immunosuppressed patients, hemorrhagic cystitis, necrotizing enterocolitis and meningoencephalitis. Coronaviruses are RNA viruses (the largest RNA genome in humans) and pleomorphic. The diseases they cause are associated with 2 serotypes. They produce up to 10% of common colds and can cause complications in patients with chronic bronchitis or asthma. They are also causative agents of SARS. Paramyxovirus: Respiratory syncytial virus (known by the acronym RSV) [7-8].

Highly contagious leads to bronchiolitis and / or pneumonia. It has been known for some time that it is not only bacteria that can contaminate food and cause disease. Viruses do it too, and very frequently. Viruses, unlike bacteria, are true parasites that need to be inside cells in order for them to multiply and be harmful. Outside of cells, they are totally inert. Viruses are particles so small that they are visible under an electron microscope. It cannot be said that they are properly living organisms. They consist only of nucleic acids (DNA or RNA), wrapped in a protein layer. In order to enter the interior of the cell, they have to penetrate the membranes that surround them. To do this, the virus protein can enter the cells of the intestinal mucosa. Once inside the cell, viruses use all the metabolic machinery of the cell to multiply inside it, ending with the destruction of it. The body defends itself against viruses by producing antibodies and developing a series of immunological mechanisms that prevent their multiplication [9].

When a virus infects a human organism for the first time, it learns to recognize it and from then on, the immune system prevents it from being reinfected. For this reason, it is possible to make vaccines against viruses, so that viral diseases can be prevented. There are four known viruses that can contaminate food: Poliomyelitis virus, Hepatitis A virus, Norwalk-type viruses and Rotavirus. It is possible that other viruses can also cause foodborne illness, but they are not yet well known: small round viruses or hepatitis virus not A, not B.

Until 1940, the Poliomyelitis virus was the only one that knew that could contaminate food. Fortunately, this disease has been practically eradicated in many countries, and also ours, through vaccination. Another foodborne virus is Hepatitis A. Most of the time, it does not seem to produce symptoms. However, it occasionally produces fever, decay, anorexia, nausea, and abdominal disorders, and jaundice appears a few days later. The incubation period varies between 15 and 50 days, with an average of four weeks. The vehicle can be any food that has been directly or indirectly contaminated with fecal matter [10].

For this reason, hepatitis is very common in places where sanitary conditions are not adequate. Its prevention lies both in the improvement of sanitary conditions, and with the use of vaccines. In any case, the infection produces a long-lasting immunity. The Norwalk-type virus, which causes diarrhea, cannot be cultured in tissues, so its detection is done only by immunological methods (ELISA) in our stools. It can also be observed in the same samples by means of the electron microscope. The incubation period varies between 12 to 48 hours and contamination is through the oral fecal cycle. Rotavirus: Rotavirus very frequently causes gastroenteritis in infants and young children, especially during the winter months. It is also transmitted by the fecal route and food is also the vehicle. Infected

people develop long-lasting immunity. As we have pointed out, viruses cannot multiply in food. Moreover, they can be inactivated before the food is consumed. The most useful method is heat. That is, it is enough to boil the food and even pasteurize it to inactivate most of the viruses [11].

Ultraviolet light is also useful for this and they are also sensitive to antioxidant agents such as hypochlorite. Viral foodborne illnesses are caused by various viruses that can contaminate food during all phases of the food chain. Foodborne illnesses (that is, illnesses that result from the consumption of contaminated food) represent a growing public health burden around the world. Specifically, those of viral origin have been revealed as a significant cause of all foodborne illnesses. Major foods associated with food-borne viral illnesses include: Shellfish (for example, oysters or mussels), crustaceans and their products that are collected and / or raised in waters near human sewage outlets (for example, sewage treatment plants). Fruits or vegetables that have grown on land fertilized with animal manure or irrigated with contaminated water, Undercooked meats such as pork. Most foodborne viral illnesses are misdiagnosed or not reported. This usually happens because people do not go to the doctor when they have mild gastroenteritis, which can be associated with some viral foodborne illnesses. Detecting viruses in food is difficult and requires a different approach than detecting most foodborne bacteria. Since viruses cannot be cultured in the laboratory like bacteria, their detection often requires molecular techniques with multiple steps for their extraction, purification, and identification.

Standardized methods for detecting viruses are not widespread, making it difficult to establish safety limits for viruses in food. While a microbiological quality control criterion is normally used as an indicator of the presence of viruses, there is substantial evidence that these criteria are insufficient for protection against foodborne viral illnesses. However, a European commission has recently designed and published a standardized laboratory method (an accepted method that can be used in different laboratories to achieve comparable results) to carry out the detection and quantification of norovirus and hepatitis virus in foods such as seafood, berries, fresh produce, and bottled water [12].

Measures that can be used to prevent foodborne viral illnesses include the following: Training and awareness-raising on good hygiene practices (for example, hand washing, washing fruits and vegetables and handling them properly, proper food preservation in the fridge, a good cooking of the pork). This is especially important in cases where food is prepared for sick or vulnerable people, for example in hospitals; Employees suffering from illness should be excluded from food service work; Use clean water to irrigate crops, especially crops for immediate consumption; Avoid the use of animal manure in crops, especially crops for immediate consumption; Shellfish farming in clean seawater protected against wastewater pollution, etc.

Coronavirus is a virus that lodges and reproduces in the human respiratory system and from there it spreads, so its pathogenesis remains clear, at least until now: it enters and is pathogenized ONLY by the respiratory route, therefore, until Today, there is no serious scientific evidence that modifies this principle, so it CANNOT be considered an ETA of viral origin. Since its inception and in relation to food safety, the World Health Organization (WHO) has published recommendations for prevention, which also include advice on maintaining good hygienic practices during food preparation and handling.

We can then recall practical advice that is valid not only against COVID-19, such as:

Flugge micro droplets, which are small drops of secretions that are expelled through the mouth and nose when talking, sneezing or coughing, so you should try to take care of the potential contamination of food, or the containers in which they are found, through them, that they can undoubtedly carry infective viral particles.

We must prevent cross contamination of food.

You should insist on frequent hand cleaning, preferably with water and soap, failing that with a 70% hydro alcoholic solution or alcohol gel.

You should not touch your face or hair and then, without washing your hands, handle food. Operators who handle food should wear

a surgical mask or a protective mask.

Fruits and vegetables should be washed with plenty of water and a few drops of bleach or alcohol vinegar, then proceed to rinse them with plenty of running water.

Food must be cooked properly, since other techniques such as refrigeration or freezing not only do not eliminate the virus, but also prolong its survival, at least up to what is known so far. It is essential to recognize that this is a totally atypical moment in world history, and as such it can generate fear, worry, fear and anxiety. The first thing to do is to take all the prevention measures indicated by reliable sources, so that individual action provides the peace of mind and security that is needed to carry out daily activities correctly and reduce risks.

COVID-19, like other viruses, can remain alive for several hours on a person's hands and on surfaces such as countertops, tables, or other utensils. If the food handler had not taken the necessary precautions during production, such as disinfection of surfaces or proper hand washing, he could easily transfer the virus from the hands to the food. Finally, we must not forget that the great viral replication that is manifested today could cause very dangerous mutations of COVID-19, like any other flu coronavirus.

We still have to wait for the so-called "herd immunity" that we will only be able to access or achieve in part, with massive vaccinations and with patients already cured of the disease. The BBPPs for personal hygiene, manufacturing and marketing and control are the best and most effective barriers against this scourge and against all known bacterial and viral ATE (s).

Therefore, and finally, not only food establishments have the obligation to apply food safety management systems or HACCP (HACCP), but each human being has the same obligation, to himself and to the population around him.

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