

Viruses

Virus particles are so small they cannot be seen by the standard light microscopes used in laboratories – a special electron microscope is needed to see these microorganisms. A virus particle is composed of either RNA or DNA enclosed in a coat of protein, sometimes with an outer envelope containing lipids (fats). (Deoxyribonucleic acid (DNA) is a nucleic acid which carries genetic instructions for the biological development of all cellular forms of life and many viruses. Ribonucleic acid (RNA) transmits genetic information from DNA to proteins, and carries the genetic instructions for many viruses.) Viruses lack the enzymes and other components needed to replicate. Thus, viruses cannot multiply in food – they can only replicate themselves in suitable living host cells. Viruses transmitted by food are produced in the human body and shed in the feces. Of particular concern for foods are the hepatitis viruses and noroviruses. These latter viruses have been mentioned in many news stories in recent years for causing large outbreaks of vomiting illnesses at large gatherings and on cruise ships. Viruses get into food through contaminated water and infected food handlers with poor hygienic practices.

Viruses are not heat resistant, with most having resistance similar to non-spore forming bacteria (see below). Hepatitis A virus is somewhat more resistant, but is still inactivated at 185°F (85°C). Avian influenza virus, which can infect chickens, turkeys, pheasants, quail, ducks, geese, and guinea fowl, as well as a wide variety of other birds, has been known to infect humans, but it is not transmitted through foods, nor is exotic Newcastle disease virus, which also causes a highly contagious poultry disease. Heating to at least to 161.6°F (72°C) internal temperature is considered adequate to inactivate both these viruses.

The Human Immunodeficiency Virus (HIV) which causes the disease AIDS (Acquired Immune Deficiency Syndrome) is a severe public health problem. AIDS has never been shown to be transmitted by food or drink. Individuals who are known to be infected with the virus can handle food safely if they observe basic sanitation precautions for food handling and take care to avoid injury when preparing food. As with any food handler, should an injury occur, food contaminated with blood should be discarded for aesthetic as well as safety reasons. Employees should be restricted from handling food if they have evidence of infection or illness that would otherwise require that they not handle food.

Viruses are not a concern in thermally processed commercially sterile and shelf-stable meat and poultry products.