

VIRUSES IN FOODS

FOOD MICROBIOLOGY AND FOOD SAFETY SERIES

Food Microbiology and Food Safety publishes valuable, practical, and timely resources for professionals and researchers working on microbiological topics associated with foods, as well as food safety issues and problems.

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VIRUSES IN FOODS

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To my mother
Bimia Devi Goyal

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Preface

Viral contamination of food and water represents a significant threat to human health. The cases of viral food borne outbreaks are on the rise partly because of increases in population, scarcity of clean water, and changes in eating habits. Outbreaks attributed to toxic, fungal, parasitic, and bacterial agents are very well known and characterized because we have known about these diseases for a long time and have developed appropriate methods to investigate and track them. Methods to investigate viral food borne diseases, on the other hand, have only recently begun to be developed. One reason for the lack of these methods is that the number of viruses present in food is too small to be detected by methods used in clinical virology, although low levels of viral contamination can still cause infection in a susceptible host. Another problem is that two of the most important food borne viruses either do not grow in cell cultures (norovirus) or grow poorly in primary isolation (hepatitis A virus). However, with the advent of molecular diagnostic methods, the role of viruses in food borne disease outbreaks is beginning to be understood.

Shellfish, fresh produce, and ready-to-eat foods are especially vulnerable to viral contamination. Although viral disease outbreaks associated with shellfish have been known to occur for decades, non-shellfish foods have only recently been implicated in several large outbreaks. In fact, the incidence of produce-associated outbreaks has increased in recent years because the consumption of such foods has increased due to health reasons and because produce is often imported from areas lacking in strict hygienic measures. Because of their very nature, fresh produce and ready-to-eat foods are more likely to contribute to the disease burden because they are often eaten uncooked, thereby eliminating the added safety factor provided by cooking and because they often come in contact with potentially contaminated water, ice, human hands, and surfaces from farm-to-table continuum. Even a single contamination event can result in widespread outbreaks as was demonstrated by the raspberry-associated outbreaks that occurred simultaneously in several countries. In addition, food is also subject to intentional contamination with highly infectious pathogens including viruses such as smallpox virus, filoviruses, arenaviruses, and alphaviruses.

A number of books are available on food borne disease outbreaks but none on the role of viruses in such outbreaks. *Viruses in Foods* was written to fill that gap. A team of international scientists has contributed material for this volume. We hope that the book serves a useful purpose, howsoever small, in the prevention and control of viral food borne outbreaks.

SAGAR M. GOYAL

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