

Recent trend of food poisoning in Japan and the development of new disinfectants

Tadashi Shimamoto

(Laboratory of Food Microbiology and Hygiene, Graduate School of Biosphere Science,
Hiroshima University)

According to the 2008 official report of the Ministry of Health, Labor and Welfare of Japan, *Campylobacter jejuni/coli* was the leading causative agent of food poisoning in Japan followed by norovirus in terms of the number of cases (Fig. 1). On the other hand, norovirus was the primary causative agent in terms of the number of patients with almost half of food poisoning patients were affected by noroviruses (Fig. 1).

Noroviruses cause nonbacterial gastroenteritis worldwide. One of the major problems for noroviruses is that ethanol, a general disinfectant, is ineffective in inactivating noroviruses. Although sodium hypochlorite (chlorine bleach) is commonly used for disinfection of noroviruses, it is a hazardous chemical and requires careful handling. Therefore alternative disinfectants for noroviruses need to be developed. However, as noroviruses generally replicate only in human intestines, the antiseptic property evaluation for new disinfectants is extremely difficult. We have therefore established a real-time reverse transcription (RT)-PCR-based detection system. Then we discovered that a formulation of persimmon tannin in ethanol disinfects more than 99% of noroviruses within 30 sec by using the real-time RT-PCR method. Persimmon is a well-known fruit in Oriental countries. Its bitter juice and condensed persimmon tannin have a long history of use as medicine containing and food additives in Japan. We have finally developed a new disinfectant including persimmon tannin and ethanol. This product, with only natural ingredients such as persimmon tannin and food additives, is safer than chlorine bleach, and more effective than any known natural alternatives. A handsoap with persimmon tannin has also been developed for public hand sanitation.

In addition, the ethanol-based disinfectant with persimmon tannin has general anti-viral activity against other common viruses tested to date and anti-bacterial activity against Gram-negative bacilli and Gram-positive cocci. Persimmon tannin could be used for general anti-viral disinfectants or drugs. A wide range of product applications is expected.

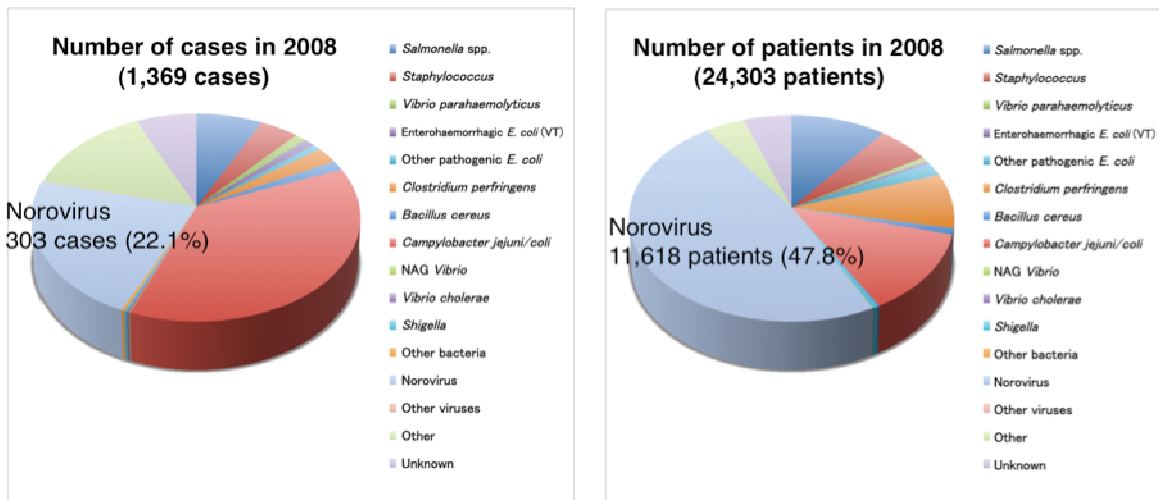


Fig. 1. Incidence of food poisoning in Japan in 2008. Norovirus is the second causative agent of food poisoning in terms of number of cases (left) and the leading causative agent in terms of number of patients (right).