

Study highlights the danger of cross-contamination of viruses from kitchen knives and graters

December 6 2012

Poor hand hygiene is often thought to be the main cause of outbreaks of foodborne illnesses. Although it is well recognized that utensils used for food preparation can harbor bacteria, a new study by Qing Wang and her colleagues from the Center for Food Safety at the University of Georgia, USA, is the first to find that viruses can just as easily be spread by cross-contamination from utensils such as knives and graters. Their study is published in the Springer journal *Food and Environmental Virology*.

The leading cause of foodborne illness in the US is currently Norovirus, with produce and ready-to-eat foods being identified as the main food types responsible for outbreaks. Previous research has shown that the prime time for [food contamination](#) occurs during preparation close to the time when food will be consumed. Although virus transfer between hands, produce and food-contact surfaces is known to occur readily at this point, to date there is little data on the potential role of kitchen utensils used for [food preparation](#) in this cross-contamination.

In this study, the researchers looked at the transfer of the [Hepatitis A virus](#) and Norovirus between a range of fruit and vegetables and different kitchen knives or flat steel coarse graters. Tests were done with uncontaminated utensils on contaminated produce and contaminated utensils on uncontaminated produce.

Results found that when using uncontaminated utensils, more than half

of all knives and graters were contaminated after preparing the contaminated produce. Tests using a contaminated knife or grater very often resulted in contamination of the produce being cut or grated. In fact, after being used on one contaminated piece of produce, sterilized knives and graters were capable of cross-contaminating up to seven further pieces of produce that were chopped or grated afterwards.

As seen in previous studies, the level of contamination observed differed with produce used and type of virus. The authors suggest that the difference in the structure of produce surface may influence virus transfer as well as the binding affinities of the different viruses to produce. For example, the smooth surfaces of a honeydew melon transferred more [Norovirus](#) to knives than the rougher surface of a cantaloupe, but the opposite was observed for Hepatitis A virus.

This study demonstrates the ease with which viruses can transfer between produce and utensils using procedures commonly adopted in kitchens. This could pose a significant health risk. The authors conclude that "... great emphasis on utensils as virus vehicles should be placed, and it is important to provide knowledge and training for food workers and consumers to limit virus spread."

More information: Wang Q, Erickson, M, Ortega YR and Cannon JL. The fate of murin norovirus and Hepatitis A virus during preparation of fresh produce by cutting and grating. *Food and Environmental Virology*. [DOI 10.1007/s12560-012-9099-4](https://doi.org/10.1007/s12560-012-9099-4)

Provided by Springer

Citation: Study highlights the danger of cross-contamination of viruses from kitchen knives and graters (2012, December 6) retrieved 9 April 2024 from

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