Fecal components modulate human astrovirus infectivity in cells and reconstituted intestinal tissues

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Abstract

Human astroviruses (HAstV) are among the most common causative agents of viral gastroenteritis, especially in children, and extraintestinal manifestations have also been described. These viruses are transmitted by the fecal-oral route, implying that stool composition and the gut microbiota may impact their ability to remain infectious. For some enteric viruses, individual bacterial envelope components and other polysaccharide-containing molecules, which are abundant in stools, have been shown to enhance capsid stability. However, the role of the complex stool environment and, most importantly, the role of interindividual differences have been poorly studied. We used HAstV as a model to investigate how the stool environment in itself, its interindividual variability, and some specific stool components could affect HAstV stability and infectivity. Using two different HAstV genotypes, we found that stools as a whole modulate astrovirus infectivity not only in an individual-dependent manner but also in a manner that depends on the viral genotype. A virus-protective effect was observed after incubation with various [...]
A

HAstV-1

Before incubation

After incubation

No incubation

PBS

LPS

PGN

E.coli

E.faecalis

B

HAstV-8

Before incubation

After incubation

No incubation

PBS

LPS

PGN

E.coli

E.faecalis