Introduction

Complete diagnosis of infectious gastroenteritis implies the detection of pathogenic bacteria, viruses and/or parasites what requires a specific microbiological procedure for each one, being time consuming. New microbiological molecular tools allow the detection of multiple and different kind of pathogens in the same sample.

Material and Methods

A total of 387 human stool clinical samples collected in 2010 and 2011, 233 retrospective (-80ºC frozen samples) and 154 prospective, were analysed for enteric pathogens.

Routine enteropathogen detection included:
- standard stool-culture for bacteria
- ELISA (ProSpect, OXOID) or an in-house PCR for rotavirus
- in-house real-time PCR for norovirus
- microscopy for Giardia lamblia
- microscopy and/or an in-house PCR for detection of Entamoeba.

All samples were tested with the Luminex xTAG-GPP® capable of simultaneous detection of 15 enteropathogens: 9 bacteria, 3 viruses and 3 parasites. Samples were read using a Luminex 200 analyzer.

Automated total nucleic acid extraction was done using the Nuclisens Easymag (bioMérieux) without any previous treatment. 82% samples were rectal swabs. Rectal swabs and stools were resuspended in B199 medium prior to extraction. Some of the discordant samples were also studied with the Seeplex® PCR (Seegene), panels V, B1, and B2.

Results

- 189/225 (84%) positive stools for enteropathogens by standard techniques (173 retrospective and 52 prospective, including 16 positive to more than one pathogen) showed agreement with the Luminex xTAG-GPP®.
- Most Campylobacter (61/63), rotavirus (63/65) and norovirus (23/26) were detected. However 7/42 Salmonella were not detected with the Luminex xTAG-GPP®, but they could neither be detected using another commercial PCR. In 6 Salmonella positive cultures the Luminex xTAG-GPP® detected the Salmonella together with an Entamoeba.
- Of the 162 negative samples (60 retrospective and 102 prospective) agreement was observed in 138 (85%). In 12/24 negative samples, the Luminex xTAG-GPP® identified a rotavirus, most of them confirmed by an in-house rotavirus PCR.
- Performance time for Luminex xTAG-GPP® was about 5 hours, working in batches of 24 samples. By standard technologies, more than 48 hours were needed to obtain final results.

Conclusions

The Luminex xTAG-GP® technology demonstrated good and quick results in the screening of human enteropathogens.

The lack of a gold standard technology makes difficult to assess the complete performance of this new technology.