

INTRODUCTION

Group A rotavirus are important pathogens associated with diarrhea in human beings and other species including young foals. Currently a variety of methods are commercially available for rapid laboratory diagnosis, i.e., enzyme immunoassays (ELISA), latex agglutination tests and immunochromatographic assays. The sensibility and specificity of such tests to detect equine rotavirus has been poorly studied.

OBJECTIVE

Evaluation of sensibility and specificity of two commercially available diagnostic kits for detection of rotavirus in stool samples from diarrheic foals.

MATERIALS AND METHODS

Stool samples (n=190) collected from young foals with diarrhea during 2009, 2010 and 2011 breeding seasons, in stud farms located in Buenos Aires province, Argentina.

All the samples were tested with Pathfinder™ Rotavirus, FASTest® ROTA Strip and an in-house ELISA KERI. All positive samples or samples showing discordant results were analyzed by RT-PCR targeting the VP6 gene.

A sample was considered “true positive” when two or more assays detected rotavirus on it.

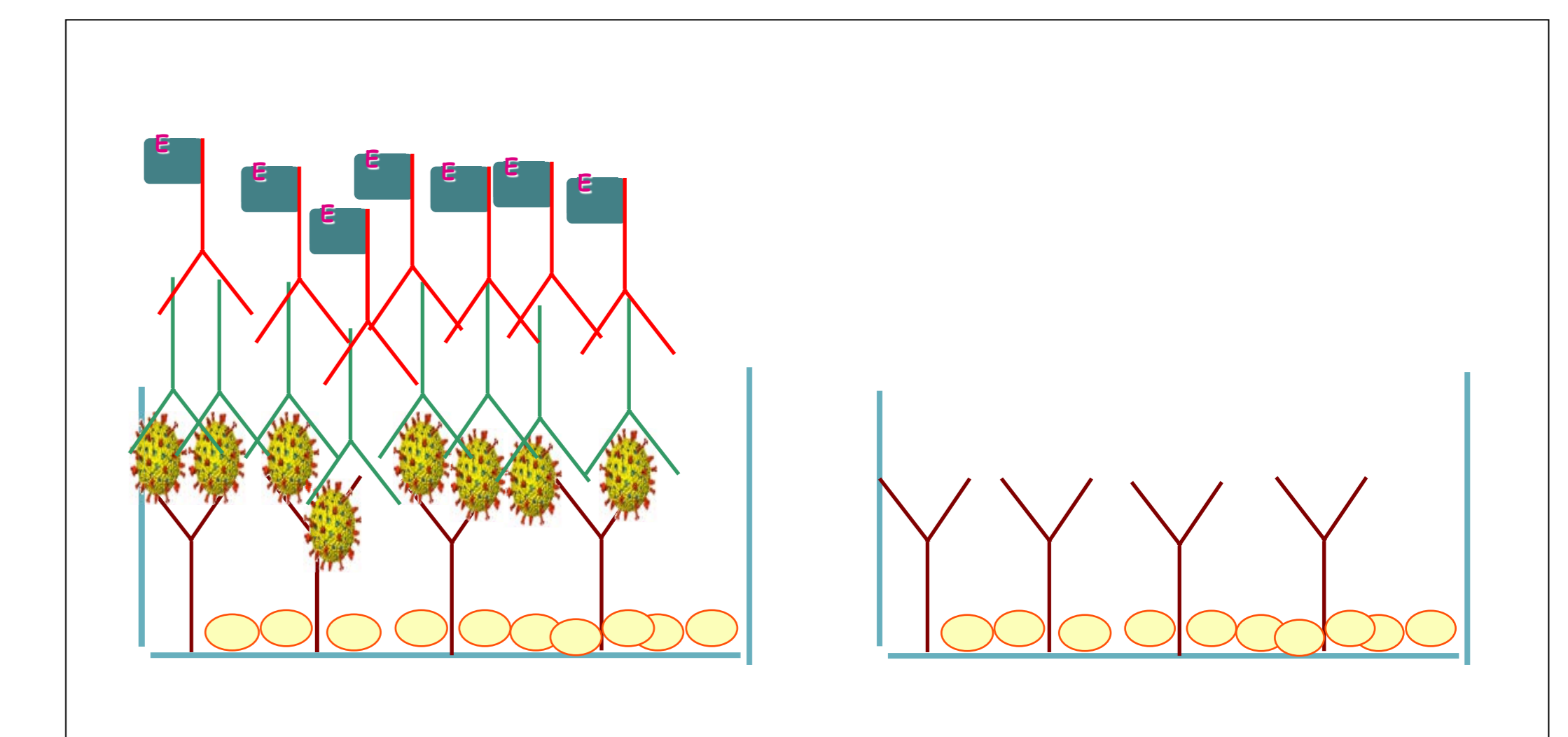
Pathfinder™ Rotavirus. BioRad, Marnes-la-Coquette, France.



FASTest® ROTA Strip. MEGACOR DIAGNOSTIK, A-6912 Hörbranz, Austria.



ELISA KERI (In house ELISA)



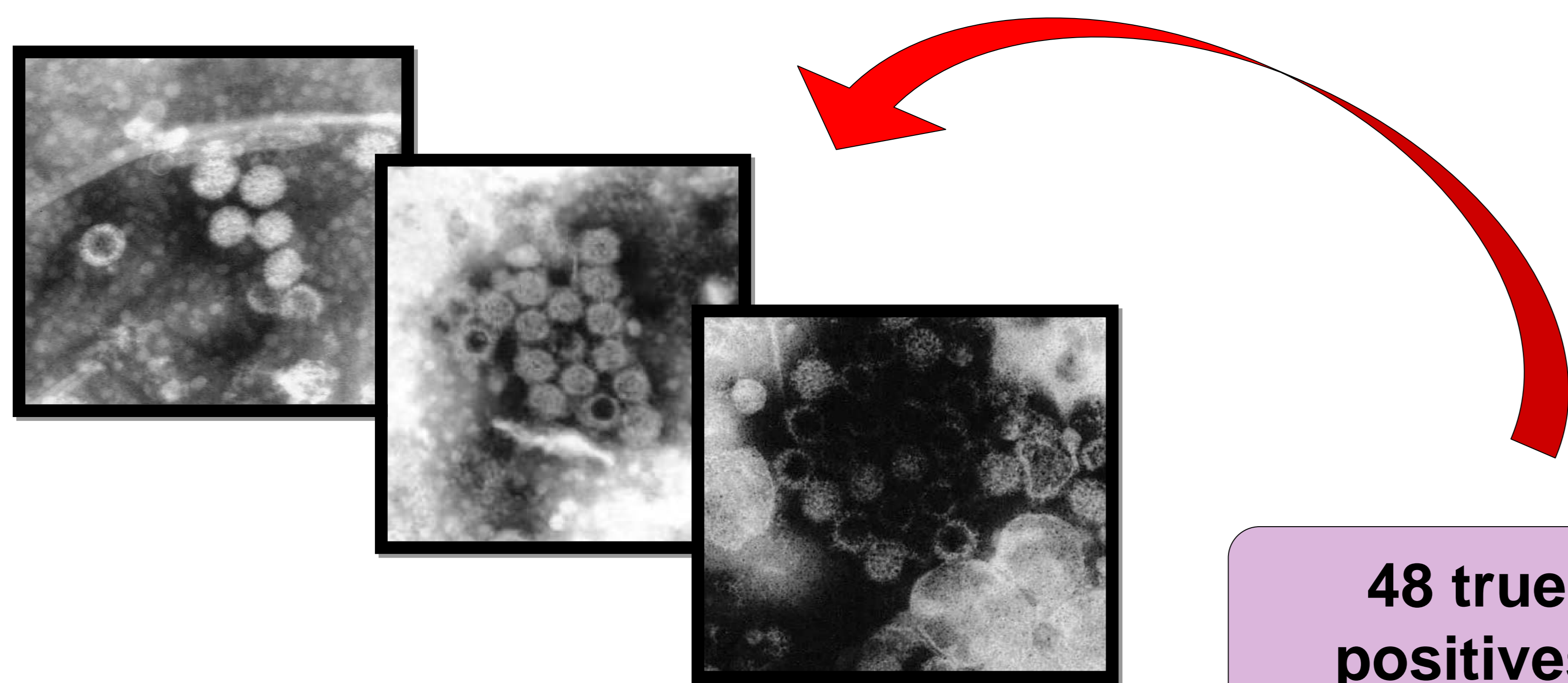
RESULTS

| | 2009 | 2010 | 2011 | Total |
|-----------------------|-----------|-----------|-----------|------------|
| True Positives | 12 | 9 | 27 | 48 |
| True Negatives | 36 | 71 | 35 | 142 |
| | | | | 190 |

Table 1. Stool samples analyzed by two commercial kits and in house ELISA.

| Samples | n | Pathfinder™ Rotavirus | | FASTest® ROTA Strip | | KERI (in house ELISA) | |
|-----------|-----|-----------------------|-----------|---------------------|-----------|-----------------------|-----------|
| | | + | - | + | - | + | - |
| Positives | 48 | 16 (33%) | 32 | 44 (91%) | 4 | 32 (67%) | 16 |
| Negatives | 142 | 5 | 137 (96%) | 7 | 135 (95%) | 2 | 140 (99%) |

| | | | |
|-------------------------------|-----|-----|-----|
| Sensitivity | 33% | 95% | 65% |
| Specificity | 96% | 92% | 99% |
| Concordance Index (CI) | 64% | 93% | 83% |



16% (6/38) I-2

100% (6/6) Detected by ELISA Pathfinder™, FASTest® ROTA Strip and ELISA KERI.

84% (32/38) I-6

100% (32/32) Detected by FASTest® ROTA Strip
22% (7/32) Detected by ELISA Pathfinder™
66% (21/32) Detected by in house ELISA KERI.

DISCUSSION

On the light of the obtained results, the use of FASTest® ROTA Strip is by far more suitable and efficient to the screening of Rotavirus infection in young foals with diarrhea than ELISA Pathfinder™. Moreover, the strip format easier and faster to carry out, and does not require any additional expensive equipment, skilled personnel and/or additional reagents.

Two different VP6 genotypes has been identified in Equine Rotavirus (I2 and I6) and one of them (I-6) is present only in horses. Interesting a 100% of VP6 I-2 was detected by the three methods, but only 23% of VP6-I6 was detected by ELISA Pathfinder™ and 66% by ELISA KERI, whereas a 100% was detected by FASTest® ROTA Strip. Considering that both commercial diagnostic kits have a VP6 monoclonal antibody as detector, the reason observed in the variation of sensibility could be due to aminoacid structural or conformational VP6 differences.