COMPARISON OF A IMMUNOCHROMATOGRAPHIC TEST FOR THE SIMULTANEOUS DETECTION OF ROTAVIRUS AND ADENOVIRUS IN STOOLS

DEPIERREUX Christophe[1], COPPE Philippe[2], LECLIPTEUX Thierry[1]

[1]*Coris BioConcept; 199, rue M. Lecomte; B-5100 Namur; Belgique*

[2] *URBM, Facultés Universitaires Notre-Dame de la Paix, 61, rue de Bruxelles; B-5000 Namur; Belgique*

INTRODUCTION

Human gastroenteritis is a multifactorial disease. This one will be induced by virus like Rotavirus or Adenovirus, by bacteria like salmonella or by organisms protozoa. Meanwhile, Rotavirus and Adenovirus are known as being common pathogens in infantile diarrhoea. These virus are usually detected by ELISA or Latex agglutination test. ELISA has the advantage to be the most sensitive and specific while Latex agglutination test has the advantage to be the quickest. Indeed, Latex agglutination test is performed in 5 minutes and does not required any particular material. Since 2 or 3 years, a brand new technique of diagnostic allows to combine sensitivity and rapidity, keeping anyway characteristics of homogeneous techniques. It is the immunochromatographic test. Coris BioConcept has developed an immunochromatographic test allowing the simultaneous detection of Rotavirus and Adenovirus. This test is compared with ELISA.

MATERIAL AND METHODS

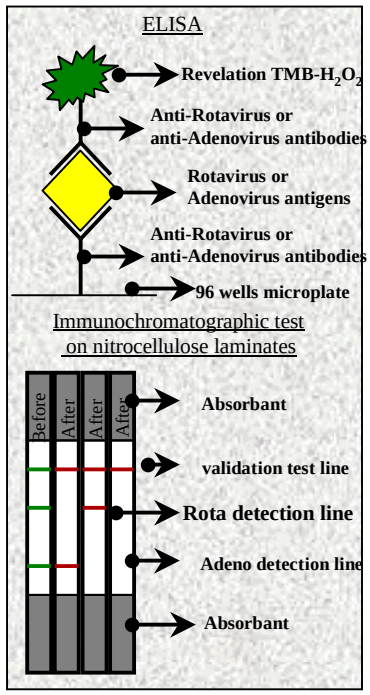
120 human stools samples have been tested to compare the immunochromatographic test with ELISA. These samples come from patients suffering of enteritis. Sensitivity and specificity have been determined for immunochromatographic test versus ELISA. Stools samples were diluted approximately 5 times in PBS-Tween (0.1 %) before their evaluation in both techniques.

ELISA

96 wells microplates were sensitized with anti-Rotavirus or anti-Adenovirus antibodies. 100 µl of stools diluted 3 times in PBS-Tween (0.1%) are incubated 60 minutes at room temperature on sensitized plates and then washed 3 times in PBS-Tween (0.1%). Anti-Rotavirus or anti-Adenovirus conjugates are dispatched on their respective microplates before an incubation of 60 minutes followed by 3 washes with PBS-Tween (0.1%) and then incubate 10 minutes with TMB-H_2O_2 before reading at 450 nm. A negative control is performed for each stool sample tested.

Immunochromatographic test

Nitrocellulose is sensitized with 2 immunoreactives, one directed against groupe A antigens of Rotavirus and the second against groupes A and F hexon-antigens of Adenovirus. Specificity of immunologic reactions is performed by monoclonal antibodies conjugated with colloidal gold particules. Sticks are immersed in stools diluted 3 times in dilution buffer provided with kit. Incubation between 5 and 10 minutes at room temperature can determine the presence of Rotavirus and / or Adenovirus in samples tested.



Results and conclusion

The comparison Combi-Strip and ELISA specific for Rotavirus or Adenovirus give the following results:

	Combi-Strip detection Adenovirus	
ELISA	POSITIVE	NEGATIVE
POSITIVE	4	0
NEGATIVE	0	117

	Combi-Strip detection Rotavirus	
ELISA	POSITIVE	NEGATIVE
POSITIVE	60	0
NEGATIVE	5	61

Specifivity = VN/(VN+FP) = 100,0 %
Sensitivity = VP/(VP+FN) = 100,0 %

Specificity = VN/(VN+FP) = 92,4 %
Sensitivity = VP/(VP+FN) = 100,0 %

Specificity and sensitivity values observed between Elisa and Combi-Strip validate the latter. Combi-Strip test alllows the reliable detection **of pathogenes Rotavirus and Adenovirus in one step. By another way, diagnostic is obtained in maximum 10 minutes, samples preparation included.** Interpretation of results is non ambiguous and does not require any special skill and is simple to use. Finally, it is very interesting to notice that negative samples presenting important background with ELISA were negative as well with Combi-Strip but with no background.
Following all those facts, we can conclude that Combi-Strip is a specific, sensitive and easy to use test for simultaneous diagnostic of Rotavirus and Adenovirus.