Validation of Copan Fecal Swab for the detection of rotavirus and adenovirus from fecal specimens using the Coris Rota–Strip and Adeno–Strip rapid antigens tests

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Updated Abstract

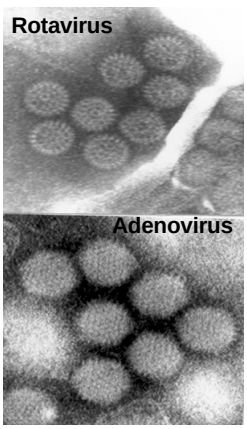
Background: Rotavirus and adenovirus have been recognized as etiological agents of childhood viral gastroenteritis. A liquid fecal transport medium suitable for seeding in culture and viral antigens would be beneficial. This study validates the Fecal Swab (FS) (Copan) compatibility with the Rota–Strip (RS) and Adeno–Strip (AS) tests (Coris) and compares faecal specimens in FS to dry fecal specimens for the detection of rotavirus and adenovirus with RS and AS tests.
Methods: FS is a tube+2 ml Cary Blair medium+flocked swab for faecal sample collection and transportation. The amount of faecal material was investigated to compensate the dilution factor introduced by the medium. RS and AS were reacted with FS medium for interference. Positive rotavirus and adenovirus specimens were used to assess the dilution ratio that would give the same results as recommended in the method. Clinical specimens (n=173) for viral gastroenteritis investigation were used for this validation.
Results: The FS collects ~100 mg (+/-10%) of faecal material. The time to reaction and intensity of the negative control line of RS and AS immersed in FS medium was equivalent to the kits diluent.
The 1:1 ratio gave the same results as the recommended method. Out of 173 clinical specimens tested, 41 adenovirus and 83 rotavirus positive and 49 negative for both were detected by both systems without discordants.
Conclusions: FS is compatible with the performance of the RS and AS.Equivalent results were obtained with 1:1 dilution for testing specimens in FS with the RS and AS tests.

Background

The Fecal Swab kit, consists of a flocked swab and a tube with 2 ml of Cary Blair medium and is used for the collection and transportation of fecal samples in liquid phase and is compatible with a variety of testing methods. The Fecal swab, is one of the Liquid Based Microbiology (LBM) devices that can be used manually or with the Walk Away Specimen Processor (WASP).

Materials

Fecal Swab kit



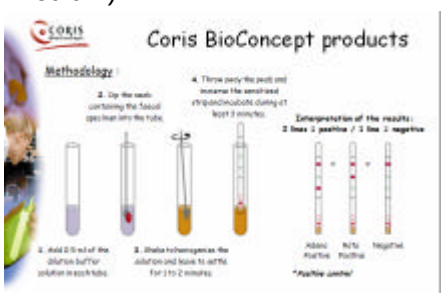
EM Pictures at 155,000x magnification

Objectives

This study validates the Fecal Swab (Copan) compatibility with the Rota–Strip and Adeno–Strip tests (Coris BioConcept) and compares faecal specimens in Fecal swab to dry fecal specimens for the detection of rotavirus and adenovirus with Rota-Strips and Adeno-Strips tests.

Methods

For this validation the amount of faecal material collected by the flocked swab was investigated in order to compensate the dilution factor introduced by the sample collection in liquid medium.
•Flocked swab of the Fecal kit were weighed before and after dipping in a fecal sample.
•The average of the fecal sample collected by the flocked swabs was calculated.
•Rota-Strips and Adeno-Strips were reacted with Fecal Swab medium for interference.
•The dilution ratio that would give the same results as the testing method recommended by the Coris package insert was assayed.
•Flocked swabs, dipped in positive rotavirus and adenovirus faecal specimens, were eluted in the Fecal medium and reacted with the Rota-Strips and Adeno-Strips undiluted, and diluted 1:1, 1:2, 1:3. 1:4 with kit's diluents.
•Faecal specimens (N=173), known positive and negative for Rotavirus or Adenovirus, were used in this study.
•Testing was done in duplicate using the Coris method and the Fecal swab kit modified method (1:1 ratio, 0.25 ml kit diluent and 0.25 ml sample eluted in Fecal medium)



Results

Rota-Strips and Adeno-Strips results

Testing Methods	Know Positive Faecal Samples Results			Total (%)
	Negative	Rota	Adeno	
Coris	49	83	41	173 (100%)
Copan Fecal swab Kit Modified (1:1 ratio)	49	83	41	173 (100%)

•The flocked swabs, dipped in faecal samples, collects ~100 mg (+/-10%) of faecal material.
The Fecal swab medium didn't interfere with the test reaction.
•The time to reaction and intensity of the control line of Rota-Strips and Adeno-Strips immersed in Fecal Swab medium was equivalent to the kits diluent.
•The Fecal swab modified testing method (1:1 ratio) gave the same results as the Coris kit method.
•Out of 173 known positive and or negative clinical faecal specimens tested, 41 adenovirus and 83 rotavirus positive and 49 negative were detected by both the Coris method and the Copan Fecal swab modified method without discordants.

Conclusions

•The Copan Fecal Swab is compatible with the performance of the Rota-Strip and Adeno-Strip antigen test.
•The Coris Rota-Strip and Adeno-Strip antigen testing kits identified all the positive Rotavirus or Adenovirus and the negative faecal clinical samples.
• Equivalent results were obtained with the Coris method and the Fecal swab modified method (1:1 dilution ratio) when testing samples with the Rota-Strip and Adeno-Strip tests.
•Faecal specimens, collected and stored in Fecal Swab, a Liquid Based Microbiology (LBM) device, are suitable for the detection of antigens.