Evaluation of the RIDA®QUICK *Campylobacter* Rapid Test (R-Biopharm) for the Detection of *Campylobacter jejuni* and *Campylobacter coli*

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INTRODUCTION AND PURPOSE

***Campylobacter jejuni* and *Campylobacter coli* are the most important bacterial agents associated with diarrheal illness in our regions; other species sucs *C. lari* and *C. concisus* have been isolated from patients with gastrointestinal infections but there is no convincing evidence these cause diarrhea.**

The objective of this study was to evaluate the performance of the new immunochrommato-graphic test RIDA®QUICK *Campylobacter* (R-Biopharm AG, Darmstadt, Germany) for the detection of *C. jejuni* and *C. coli*.

METHODS

Between July and September 2014, 185 consecutive liquid or loose fecal samples from patients diagnosed with diarrhea and admitted less then 3 days at the hospital were studied by conventional culture methods for recovery of *Salmonella*, *Shigella*, *Yersinia*, and *Aeromonas*, and for *Campylobacter spp*. by culture of a combination of a semisolid blood-free selective-motility medium and filtration through a 0.45µm cellulose membrane of a blood containing antibiotic free agar surface. The decision to only test liquid or loose samples was made in response to the figures in table 1, which represent the difference between patients admitted less then 3 days (year 2013) and patients where there was no such criteria (year 2012).

Table 1: Distribution of Campylobacter species in 2012 and 2013 (patients admitted <3 days) from a total of 104 isolated enteropathogens.

		C. jejuni	*C. coli*	*C. concisus*	*Campylobacter spp.*
Liquid	2012	38,5%	5,8%	3,8%	17,2%
	2013	34,3%	4,6%	11,1%	1,8%
Loose	2012	19,2%	1,9%	1,9%	3,9%
	2013	22,2%	0,0%	13,0%	2,7%
Solid	2012	3,8%	0,0%	1,0%	2,9%
	2013	4,6%	0,9%	2,8%	1,9%

Colonies suspected of being enteropathogenic were identified by the means of the MALDI-TOF Biotyper™ system (Bruker Daltonik, GbmH, Bremen, Germany) or conventional or biochemical methods. *Clostridium difficile* was detected only in liquid stool specimens by a combination of antigen, culture and PCR based methods. Parasites, if requested, were detected by microscopy. The RIDA®QUICK *Campylobacter* test was used according to the manufacturer's instructions. The workflow of this protocol is showed in figure 1.

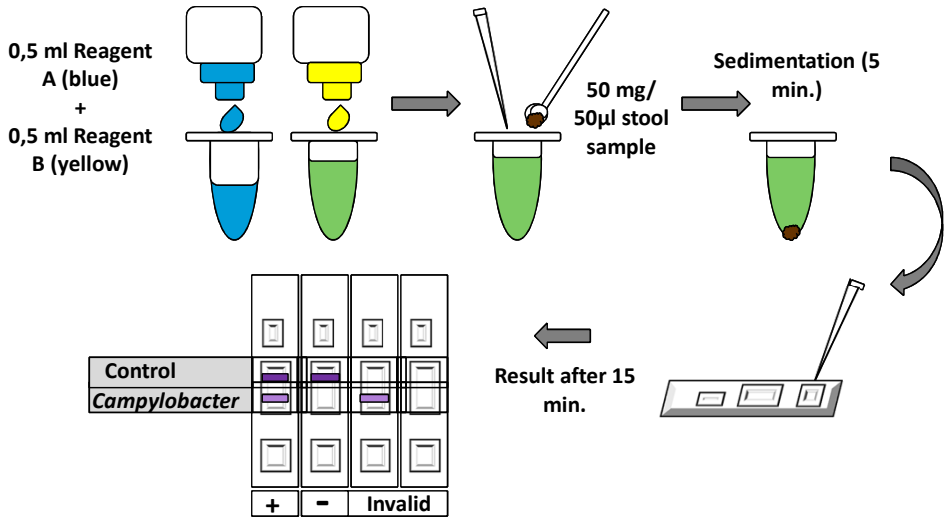

Figure 1: Workflow of the RIDA®QUICK *Campylobacter* test.

RESULTS

Table 2: Distribution of *Campylobacter species* isolated from the tested samples.

Culture Identification	No. of Isolates	% of total tested (n=185)
Campylobacter spp.	22	11.9%
C. jejuni	13	7.0%
C. coli	1	0.5%
C. concisus	7	3.8%
C. lari	1	0.5%
Salmonella spp.	2	1.1%
Shigella spp.	2	1.1%
Aeromonas spp.	2	1.1%
Total	28	15.1%

Table 3: Results of samples tested compared to culture.

	Culture Positive	Culture Negative	Total
RIDA®QUICK Positive	13	3	16
RIDA®QUICK Negative	1	168	169
Total	14	171	185

Compared to culture, sensitivities and specificities were 92.9% and 98.3%.

No false positive results were found for the *C. concisus* and *C. lari* positive samples. The only RIDA®QUICK *Campylobacter* negative sample (1/14) grew only one colony of *C. jejuni*. One out of three RIDA®QUICK *Campylobacter* positive culture negative samples, turned out positive for *Campylobacter spp.* when being confirmed with PCR. A second RIDA®QUICK *Campylobacter* positive culture negative sample, was also positive for toxine positive *Clostridium difficile* and *Giardia Lamblia*, but tested negative for *Campylobacter spp*. with PCR.

Turn-around time (TAT) in culture was 91,2 hour against 0,4 hour; hands-on time was 5 min.

CONCLUSION

The RIDA®QUICK *Campylobacter* is a rapid and user friendly test for the diagnosis of enteritis due to *C. jejuni* and *C. coli*, reducing significantly the TAT for the diagnosis of the most important cause of bacterial diarrhea; its use can be recommended in combination with culture for the other enteropathogens.