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Rapid detection of *Giardia intestinalis* and *Cryptosporidium* spp. in stool samples using an antigen-based detection approach: evaluation of a new commercial immunochromatographic strip test

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Background: Microscopy is the gold standard for routine laboratory diagnosis in faecal parasitology but there is a growing interest in alternative methods to overcome the limitations of microscopic examination, which is time-consuming and dependent on the operator's skills and expertise. In this context, PCR and antigen-based detection tests could represent attractive alternatives. The aim of this study was to evaluate a new commercial immunochromatographic assay (Crypto/Giardia K-SeT, CORIS BioConcept, Belgium) for simultaneous detection of *Giardia intestinalis* and *Cryptosporidium* spp. antigens from stool specimens.

Material/methods: To this aim, the commercial dip strip assay was evaluated blindly on a reference panel of 184 frozen stool samples, collected prospectively from 12 laboratories, and previously validated using a standardized protocol. The panel included 50 negative samples and 134 positive samples including *G. intestinalis* (n=37) and *Cryptosporidium* spp. (n=30 including 28 *C. parvum*/*C. hominis*, 1 *C. felis* and 1 *C. meleagridis*) together with 20 other gastrointestinal parasites representing the diversity of pathogens that can be recovered from stool samples (*Blastocystis* spp., amoeba, *Schistosoma* spp., hookworms, flagellates, microsporidia, etc....). Discrepancies between both methods were investigated using specific PCR assays.

Results: This new immunochromatographic assay was able to detect 33 out of the 37 *Giardia intestinalis* positive samples and 26 out of the 30 *Cryptosporidium* spp. positive samples. Both *C. meleagridis* and *C. felis* were detected (n=2). Except a single sample positive for *G. intestinalis* antigen but not confirmed by microscopy/PCR, neither false-positive nor cross-reactivity were noted with other gastrointestinal parasites.

Conclusions: This new immunochromatographic test offers interesting performances for the detection of *G. intestinalis* (Se=89.2%; Sp=99.3%) and *Cryptosporidium* spp. (Se=86.7; Sp=100%) and a good agreement with microscopic examination. Although less sensitive than microscopy, antigen-based detection is simple to perform and time-saving allowing a reduced turnaround time for the detection of these two relevant parasites causing diarrhea in developing countries. Its position in the routine diagnostic care now needs to be determined.