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Letter to the Editor

Sirs,

We read with great interest the paper by Yamamoto *et al*. recently published.[1] Of note, endoscopy with biopsies is considered as the gold standard for the diagnosis and follow-up of patients with inflammatory bowel disease (IBD) but is expensive, time-consuming, and poorly accepted by the patient. Detection and follow-up of bowel inflammation may be investigated by several plasma and stool biomarkers, especially faecal calprotectin (FC), which might be one of the most accurate.

Different methods and kits for the measurement of FC are commercialised. However, data comparing FC concentrations between available methods remain scarce.

During a period of 7 days, a stool sample was obtained from 26 adult patients, 20 of whom were affected by IBD. FC concentrations were assessed at the biochemistry department of Rennes hospital, France. Three methods were tested: two ELISA tests [‘Calprest’ from Eurospital (dosing range 15–500 μg/g) and ‘Bühlmann fCAL ELISA’ from BÜHLMANN (dosing range 30–1800 μg/g)], and one fully automated immunoassay [‘LIAISON Calprotectin’ from DiaSorin using chemiluminescent immunoassay on a LIAISON-XL Analyser (dosing range 5–800 μg/g)]. Calprotectin extraction from stools was performed using the same device. The extraction buffer was provided by each manufacturer. Samples with values exceeding the upper limit of linearity were diluted and reanalysed.

The three different tests were compared using scatter graphs (Figure 1). Bühlmann fCAL ELISA and LIAISON Calprotectin were well correlated (Pearson correlation test, $r = 0.83$, $P < 0.0001$, Figure 1a), whereas Calprest was poorly correlated with LIAISON (Pearson correlation test, $r = 0.28$, $P = 0.0062$, Figure 1b) as well as with Bühlmann fCAL ELISA (Pearson correlation test, $r = 0.51$, $P = 0.0001$). This lack of correlation of Calprest test with the others may be due, at least in part, to the discrepancy observed for high FC concentrations.

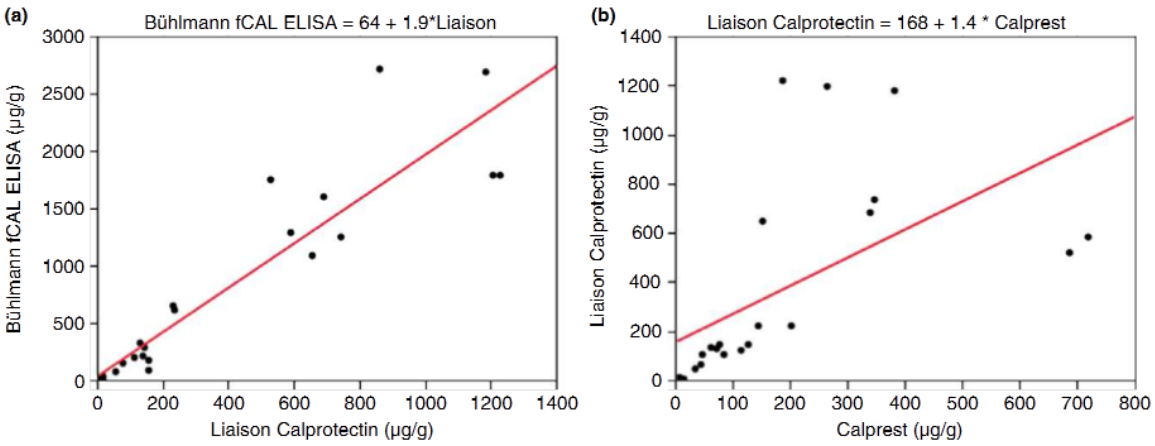

Figure 1. (a) Correlation and trendline between the Bühlmann fCAL ELISA and the LIAISON Calprotectin assays ($r = 0.83$, $P < 0.0001$), and (b) correlation and trendline between the LIAISON Calprotectin assay and the Calprest assay ($r = 0.28$, $P = 0.0062$).

In addition, the direct comparison of absolute FC values between the three tests demonstrated a poor correspondence. A twofold to threefold increase was observed. FC values obtained with the Bühlmann assay were twofold higher compared with the DiaSorin assay and threefold higher compared with the Eurospital assay.

Objective mucosal or transmural inflammation (endoscopy or imaging) was assessed for 15 of the 26 patients in the same week. Characteristics of each test were determined to predict mucosal inflammation using a FC concentration cut-off of 250 µg/g.[2] The sensibility, specificity, positive predictive value, and negative predictive value for Bühlmann fCAL-ELISA, LIAISON Calprotectin, and Calprest were 73%, 60%, 83% and 43%, 67%, 100%, 100% and 50%, and 47%, 100%, 100% and 38%, respectively.

In conclusion, a huge difference was observed between the three FC assays that resulted in varying accuracy of FC in predicting mucosal inflammation, according to the method used. This result confirms previous report from Havelka *et al.*[3] When looking for cut-off values of FC to manage patients with IBD, these differences should be taken into account. These variations make unavoidable the use of the same method during the follow-up of patients and point out the urgent need for further standardization or method specific cut-off.

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