S100A12 in EDTA plasma – a Cautionary Tale

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A number of novel systemic or fecal markers of inflammation have been evaluated in the context of Inflammatory Bowel Disease (IBD) in recent years. [1] These markers promise to have roles in diagnostic algorithms, in assessment of mucosal healing and in prediction of relapse. One such marker is S100A12 (also known as Calgranulin C or EN-RAGE), which is established as a sensitive and specific fecal marker of gut inflammation in children and adults. [1,2] Additional studies have demonstrated that circulating levels of this protein are also elevated in IBD. [3] S100A12 is a small calcium- and zinc binding protein belonging to the S100 family of proteins and is predominantly secreted by neutrophils. [4] Binding of calcium leads to a conformational change in the structure of S100A12, thereby altering potential recognition sites. As a consequence, calcium affects the measured values of S100A12, as does heparin. [5] Furthermore, serum S100A12 measurements are shown to differ from samples collected into EDTA-plasma tubes. [5] This preliminary study aimed to confirm the differences between measurement of S100A12 in serum and EDTA plasma and to establish correlations between paired samples. Peripheral blood samples were collected from 15 adult volunteers: half was placed into a plain tube for serum with the remainder placed in an EDTA tube. Levels of S100A12 in these samples were defined using a commercial immunoassay (R and D Systems, Minneapolis, MN). Mean (± standard error) S100A12 levels were five times greater in serum than in plasma (1,041 ± 310 ng/ml vs. 200 ± 53 ng/ml: \( P = 0.0001 \)). Further, there was no correlation between the paired samples (Spearman's correlation: \( r = 0.225, P = 0.420 \)) (Fig. 1). These results confirm the previous description of differences between levels in serum and plasma. In addition, these data demonstrate a

![Figure 1](scatterplot_of_serum_and_edta_plasma_s100a12_levels_collected_aspaired_samples_from_15_healthy_volunteers.png)
lack of consistency between levels in these two conditions, meaning that plasma levels cannot be used directly to approximate serum levels. Future studies examining circulating S100A12 in IBD or other conditions should utilize serum and not plasma.
References


