Quantitative and comparative analysis of BAFF and PAF in two different dried blood methods of collection

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\textbf{Aims:} The aim of this study is to evaluate quantitative differences in collection and detection of B Cell Activating Factor (BAFF) and Platelet-Activating Factor (PAF) between two different kinds of dried blood sample collectors: Whatman Neonatal card 903 (CARD) and Copan Nylon Swab (SWAB).

\textbf{Methods:} A dried blood spot is a common, moderately-invasive method for collecting patient blood from finger pricks. The blood samples are collected from 18 individuals (10 females and 8 males). The collection of the samples is carried out in triplicate for both devices. Serum samples are assayed by Enzyme-Linked Immuno-Sorbent-Assay ELISA for BAFF (R&D Systems) and PAF (Elabscience). Results were presented as mean ± SEM.

\textbf{Results:} As regards BAFF values, there was a significant difference between SWAB and CARD, 0.51 ± 0.04 ng/ml and 0.37 ± 0.03 ng/ml respectively (p = 0.01). Also about PAF, there was a significant difference between the two collection methods with values of 13.4 ± 2.6 ng/ml for SWAB and 7.4 ± 0.9 ng/ml for CARD (p = 0.04). Either way there were higher values with SWAB than with CARD.

\textbf{Discussion:} Many studies suggest that BAFF might be a new mediating mechanism in food-related inflammation. Higher levels in non-atopic compared with atopic patients, and no correlation between BAFF and IgE, suggest that BAFF might be particularly involved in non-IgE-mediated reactions. According to Finkelman, antigens can cause systemic anaphylaxis through the classic pathway by cross-linking IgE bound to mast cell FceRI, stimulating histamine release, or through the alternative pathway by forming complexes with IgG that cross-link macrophage FcγRs, stimulating PAF release. These new insights have increased the interest in these two molecules both in research and in clinical settings, increasing the need for a comparison between different methods of analysis for better uniformity.

\textbf{Conclusion:} We have obtained different results for BAFF and PAF levels using two different methods of collection and these differences need to be considered in order to compare the results obtained using the two different devices. Different absorption on the support of the device, a different degree of residual moisture in storage, a different interaction between antibody and the matrix of the device are all reasons that can explain the quantitative differences shown. These aspects will be investigated in future studies.