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Effects of borage (*Borago officinalis*) oil supplementation on the expression of monocyte and T-cell adhesion molecules in healthy volunteers

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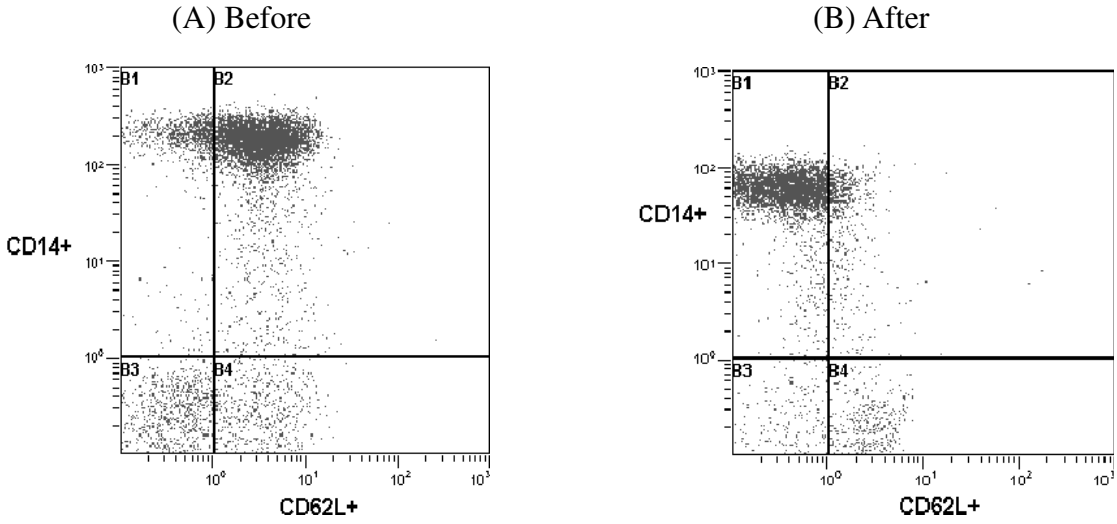
Essential fatty acids (EFA) have unique roles in that they can affect inflammatory cell functions directly or as precursors to molecules that can regulate their functions[1]. In comparison with linoleic acid (LA; 18: 2*n*-6), γ-linolenic acid (GLA; 18: 3*n*-6) has superior biopotency because it bypasses Δ6 desaturation, which is regarded as a key regulatory rate-limiting enzymic step controlling the formation of long-chain PUFA and is beneficial in some inflammatory disorders[1,2]. In the present study seven healthy volunteers ingested 14 g GLA-rich borage oil/d consecutively for 13 weeks. Peripheral blood was obtained at 0, 4, 7 and 13 weeks and the expression of the adhesion molecules CD11a+, CD11b+, CD36+, CD54+ and CD62L+ on monocytes (CD14+) and CD11a+, CD54+ and CD62L+ on T-cells (CD3+) was investigated using specific conjugated monoclonal antibodies and flow cytometry. Cell surface expression of CD62L+, CD36+ and CD54+ on monocytes after 4, 7 and 13 weeks was significantly lower ($P<0.001$, $P<0.005$ and $P<0.01$ respectively) compared with baseline expression. CD62L+ and CD54+ expression on T-cells after 4 and 7 weeks of supplementation was also significantly lower ($P<0.05$ and $P<0.01$ respectively) compared with baseline expression. The Figure illustrates flow cytometric analysis of CD14+CD62L+ expression before and after 13 weeks of borage oil supplementation.



These results demonstrate that GLA can significantly decrease cell surface expression of certain adhesion molecules particularly on monocytes, suggesting that this may be one of the mechanisms by which it is beneficial in some human and experimental autoimmune inflammatory disease states[1,2].

1. Harbige LS (2003) *Lipids* **38**, 323–341.
2. Harbige LS, Yeatman N, Amor S & Crawford MA (1995) *Br J Nutr* **74**, 701–715.