Composite and individual phospholipid fatty acids associate with pro-thrombotic and pro-fibrinolytic clot properties in a healthy African population

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**Background:** Fatty acids and their role in cardiovascular disease have been reported, with varying results. A few clinical and *in vitro* studies have shown certain fatty acids to influence clot structure and lysis. However, the relationship of individual plasma fatty acids and composite fatty acids with fibrinogen and clot properties are still unclear, especially at population level.

**Aim:** We investigated the association of plasma total phospholipid fatty acids with total fibrinogen, fibrinogen γ’ and clot properties.

**Methods:** This cross-sectional study included data of 899 healthy participants. Total fibrinogen (Clauss) and fibrinogen γ’ (ELISA) were measured as well as clot properties [lag time, slope, maximum absorbance and clot lysis time (CLT)] and plasma total phospholipid fatty acid composition (GC-EI-MS).

**Results:** Higher total saturated fatty acids, polyunsaturated fatty acids (both n-3 and n-6) and some of their constituent fatty acids associated with increased fibrinogen and a pro-thrombotic clot phenotype. Increased total monounsaturated fatty acids, some of its constituents and the n-6/n-3 fatty acid ratio associated with a decreased fibrinogen and pro-fibrinolytic clot phenotype. Relationships with clot properties remained after adjustment for fibrinogen. Fibrinogen γ’ did not associate with any of the plasma phospholipid fatty acids.

**Conclusion:** Our results indicate that total fibrinogen and clot properties are influenced by plasma fatty acids. Owing to constituent fatty acids not consistently demonstrating the same relationship than that of composite fatty acids, the latter should not be used as a proxy marker of the relationship of individual fatty acids with plasma clot properties.

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