Where are the hotspots and coldspots of landscape values, visitor use and biodiversity in an urban forest?

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The use of serum MMP-9 and TIMP-1 in acute coronary syndrome

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Systemically measured matrix metalloproteinase (MMP)-9 and its endogenous inhibitor TIMP-1 are important proteins and inflammatory mediators in acute coronary syndrome (ACS) (Lahdentausta et al. 2018). Santana and Tanus-Santos (Santana & Tanus-Santos 2018) argued that the sample material may raise technical issues. They refer to earlier publications in which higher MMP-9 and TIMP-1 concentrations are obtained in serum compared to plasma (Gerlach et al. 2005). Within different plasma samples, MMP-9 and TIMP-1 concentrations are higher when EDTA is used as anticoagulant compared to heparin (Jung et al. 1998).

In clinical and research use consistent sample material and processing methods should be used to avoid misinterpretations. It is crucial to use the same sample material and the same processing methods throughout the whole study to maintain the comparability. In our study we used serum collected and processed similarly in all subjects, thus the difference between ACS patients and their healthy controls were analyzed and used in statistical analysis (Lahdentausta et al. 2018).

Every sample collection and processing methods have its limitations and challenges; plasma is processed from blood by using anticoagulants, and especially EDTA processing interferes and decreases MMP activity (Alby et al. 2002). Different blood fluids may describe the inflammatory and disease status slightly differently; serum concentrations include the free circulating and “secretable” MMP-9 and TIMP-1, whereas EDTA plasma contains the EDTA-inhibited concentrations. The MMP-9 and TIMP-1 concentrations of cases and controls should be measured from same sample material collected and processed similarly through study.

Compared to plasma, MMP-9 and TIMP-1 are released to serum due to complement, contact, and platelet activation during the coagulation (Alby et al. 2002). These processes are important in haemostasis and thrombosis, and they are also involved in inflammation and innate immune response. The elevated MMP-9 concentrations in serum compared to plasma may describe the inflammatory burden or "reservoir", i.e. the inflammatory potential. Therefore, serum MMP-9 and TIMP-1 have great potential to become cardiac biomarkers in clinical use.

Compliance with Ethical Standards

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Ethical Approval: This article does not contain any studies with human participants or animals performed by any of the authors.

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