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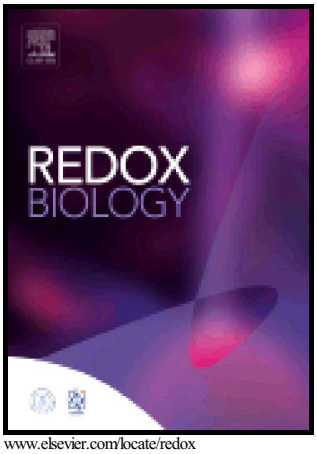

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Cigarette smoke extract counteracts atheroprotective effects of high laminar flow on endothelial function☆

Sindy Giebe[1], Natalia Cockcroft[2], Katherine Hewitt[2], Melanie Brux[1], Anja Hofmann[1], Henning Morawietz[1*], Coy Brunssen[1*]

[1]*Division of Vascular Endothelium and Microcirculation, Department of Medicine III, University Hospital Carl Gustav Carus Dresden, Technische Universität Dresden, Dresden, Germany*

[2]*Research & Development, British American Tobacco, Southampton, United Kingdom*

Henning.Morawietz@uniklinikum-dresden.de

Coy.Brunssen@uniklinikum-dresden.de

[*]Corresponding author. Coy Brunssen, PhD; Division of Vascular Endothelium and Microcirculation, Department of Medicine III, University of Technology Dresden, Fetscherstr. 74, D-01307 Dresden, Germany. Tel.: +49-351-458-6677; fax: +49-351-458-6354

[*]Corresponding author. Henning Morawietz, PhD; Division of Vascular Endothelium and Microcirculation, Department of Medicine III, University of Technology Dresden, Fetscherstr. 74, D-01307 Dresden, Germany. Tel.: +49-351-458-6625; fax: +49-351-458-6354

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Abstract

Tobacco smoking and hemodynamic forces are key stimuli in the development of endothelial dysfunction and atherosclerosis. High laminar flow has an atheroprotective effect on the endothelium and leads to a reduced response of endothelial cells to cardiovascular risk factors compared to regions with disturbed or low laminar flow. We hypothesize that the atheroprotective effect of high laminar flow could delay the development of endothelial dysfunction caused by cigarette smoking. Primary human endothelial cells were stimulated with increasing dosages of aqueous cigarette smoke extract (CSEaq). CSEaq reduced cell viability in a dose-dependent manner. The main mediator of cellular adaption to oxidative stress, nuclear factor erythroid 2-related

☆ This study shows the activation of major atherosclerotic key parameters by CSEaq. Within this process, high laminar flow is likely to reduce the harmful effects of CSEaq to a certain degree. The identified molecular mechanisms might be useful as for development of alternative therapy concepts.

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