

Purchase

Export

Search ScienceDirect

Advanced search

## Vascular Pharmacology

Volume 74, November 2015, Pages 103–113



## Diminazene enhances stability of atherosclerotic plaques in ApoE-deficient mice

Rodrigo A. Fraga-Silva<sup>a</sup>, Fabrizio Montecucco<sup>b, c</sup>, Fabiana P. Costa-Fraga<sup>a</sup>, Alessio Nencioni<sup>c</sup>, Irene Caffa<sup>c</sup>, Maiia E. Bragina<sup>a</sup>, François Mach<sup>b</sup>, Mohan K. Raizada<sup>d</sup>, Robson A.S. Santos<sup>e</sup>, Rafaela F. da Silva<sup>e</sup>, Nikolaos Stergiopoulos<sup>a</sup>

[Show more](#)

### Choose an option to locate/access this article:

Check if you have access through your login credentials or your institution

[Check access](#)

[Purchase \\$35.95](#)

[Get Full Text Elsewhere](#)

doi:10.1016/j.vph.2015.08.014

[Get rights and content](#)

### Recommended articles

[Selective inactivation of NADPH oxid...](#)  
2015, Atherosclerosis [more](#)

[Beta2-adrenergic activity modulates ...](#)  
2015, Vascular Pharmacology [more](#)

[Treatment with KLEPTOSE® CRYSM...](#)  
2015, Vascular Pharmacology [more](#)

[View more articles »](#)

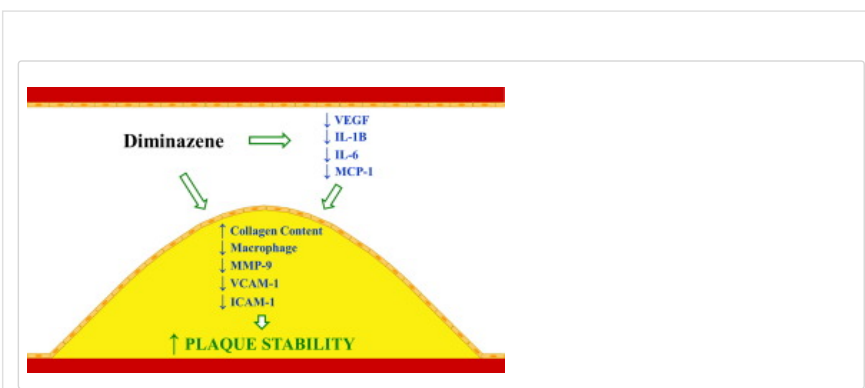
Citing articles (0)

Related book content

### Abstract

Angiotensin (Ang) II contributes to the development of atherosclerosis, while Ang-(1–7) has atheroprotective actions. Accordingly, angiotensin-converting enzyme 2 (ACE2), which breaks-down Ang II and forms Ang-(1–7), has been suggested as a target against atherosclerosis. Here we investigated the actions of diminazene, a recently developed ACE2 activator compound, in a model of vulnerable atherosclerotic plaque. Atherosclerotic plaque formation was induced in the carotid artery of ApoE-deficient mice by a shear stress (SS) modifier device. The animals were treated with diminazene (15 mg/kg/day) or vehicle. ACE2 was strongly expressed in the aortic root and low SS-induced carotid plaques, but poorly expressed in the oscillatory SS-induced carotid plaques. Diminazene treatment did not change the lesion size, but ameliorated the composition of aortic root and low SS-induced carotid plaques by increasing collagen content and decreasing both MMP-9 expression and macrophage infiltration. Interestingly, these beneficial effects were not observed in the oscillatory SS-induced plaque. Additionally, diminazene treatment decreased intraplaque ICAM-1 and VCAM-1 expression, circulating cytokine and chemokine levels and serum triglycerides. In summary, ACE2 was distinctively expressed in atherosclerotic plaques, which depends on the local pattern of shear stress. Moreover, diminazene treatment enhances the stability of atherosclerotic plaques.

### Graphical abstract



## Keywords

Diminazene; Angiotensin-converting enzyme 2; Angiotensin; Atherosclerosis; Inflammation; Plaque stability; Plaque vulnerable

Corresponding author at: Laboratory of Hemodynamics and Cardiovascular Technology, Institute of Bioengineering, Ecole Polytechnique Fédérale de Lausanne, Station 17, BM 5115, CH-1015 Lausanne, Switzerland.

Copyright © 2015 Elsevier Inc. All rights reserved.

---

[About ScienceDirect](#)   [Remote access](#)   [Shopping cart](#)   [Contact and support](#)  
[Terms and conditions](#)   [Privacy policy](#)

Cookies are used by this site. For more information, visit the [cookies page](#).

Copyright © 2016 Elsevier B.V. or its licensors or contributors. ScienceDirect ® is a registered trademark of Elsevier B.V.