

Reactive oxygen and nitrogen species and mechanotransduction during shockwave application

Author:

Hans-Juergen Duchstein (1), Helmut Neuland (2)

Institution:

1) Institute of Pharmacy, University of Hamburg 20146 Hamburg Germany

2) Centre for Shockwave Therapy 61476 Kronberg, Germany

Device and producing company:

University of Hamburg

Introduction:

It was supposed that during shockwave application reactive oxygen and nitrogen species play an important role.

Methods:

Reactive nitrogen species like the NO-radical were measured by an ozone induced chemiluminescence. Reactive oxygen species were measured by ultra weak chemiluminescence.

Results:

It was shown that NO was produced during shockwave application by measuring the NO signal through the skin. Reactive oxygen species, which we cannot discriminate now, were induced by shockwave application and were identified by ultra weak chemiluminescence.

Discussion:

We have shown under other circumstances that an extrinsic stress like UV-light, ozone or cigarette smoke can induce the generation of reactive oxygen and nitrogen species. We believe that application of shockwaves are nothing more than another kind of extrinsic stress and can induce mechanotransduction and the production of reactive species.

Conclusion:

The generation of reactive oxygen and nitrogen species may play a role in the mechanotransduction pathway.