

# Relaxant and antioxidant capacity of red wine polyphenols on isolated mice corpora cavernosa

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**Introduction.** The wine polyphenols resveratrol and quercetin are known for their vasorelaxant and antioxidant capacity. It is assumed that they exert their effect through activation of the NO/sGC pathway. Vasodilators as well as antioxidants can regulate penile erection and be beneficial for the treatment of erectile dysfunction (ED).

**Aims.** The goal of this study was to evaluate the NO/sGC dependency of the relaxant effect of resveratrol and quercetin on mice corpora cavernosa (CC) as well as to explore their influence on oxidative stress-induced ED.

**Methods.** Isolated mice CC were mounted into organ baths. Cumulative concentration-response curves were constructed for resveratrol and quercetin in the absence/presence of inhibitors of the NO/sGC pathway. In addition, the effect of resveratrol and quercetin was studied on NO-mediated corporal relaxations using acetylcholine (Ach), sodium nitroprusside (SNP) and electrical field stimulation (EFS). In certain experiments corporal tissues were exposed to oxidative stress using palmitic acid (PA, 0.5 mM).

**Results.** While both polyphenols are potent vasodilators of mice aorta, only resveratrol relaxes mice CC. In contrast to aorta, the relaxant capacity of resveratrol on CC was not diminished in sGC $\alpha_1$ <sup>-/-</sup> mice. The polyphenols did not influence Ach-, SNP- or EFS-mediated relaxations as such. Only resveratrol was able to significantly reverse PA-induced decrease of EFS relaxations.

**Conclusion.** The red wine compound resveratrol, but not quercetin, relaxes isolated mice CC concentration-dependently manner through mechanisms independent of the NO/sGC pathway. In case of mild oxidative stress, resveratrol acts as a protective antioxidative compound and preserves relaxation in mice CC.