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Single Dose of Sildenafil and Atorvastatin Increase Skin Survivability, but only Atorvastatin Increase Nitric Oxide in Rat Ischeamia Reperfusion Model

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Abstract

Background: Ischeamia reperfusion injury is a frequent challenge during tissue reconstruction. Atorvastatin and Sildenafil, have been studied for their protective and/or therapeutic effects on various organ systems subjected to IRI. The aim of the present study was to compare a single dose of Atorvastatin and Sildenafil pretreatment on acute oxidative/nitrosative stress and the subsequent dermal flap necrosis.

Materials and methods: Forty-five Sprague-Dawley rats, were randomly allocated into three equal groups(n=15): Group A: Control rats treated with intraperitoneal saline, Group B: Sildenafil group, and Group C: atorvastatin group. All rats underwent flap elevation and inferior epigastric artery occlusion thirty minutes after drug administration. Myeloperoxidase activity, malondialdehyde levels and inducible nitric oxide synthase activity were evaluated 12 hours after reperfusion. Flap survivability was analysed 7 days after the procedure.

Results: Statistically significant reduction was detected in sildenafil and atorvastation. Measurements of myelopyroxidase followed a similar pattern, interestingly malonadehyde levels measured to be significantly lower in the sildenafil group. Contrary, iNOS activity atorvastatin was significantly elevated in atorvastatin group.

Conclusion: The single dose of atorvastatin or sildenafil increase flap survivability almost equally, however only atorvastatin enhances significantly iNOS expression

Key words: ischeamia-reperfusion injury, sildenafil, atorvastatin, flaps, rat, inferior epigastric artery skin flap, experimental surgery