POLYDEOXYRIBONUCLEOTIDE (PDRN) INCREASES VEGF PRODUCTION AND BLOOD FLOW IN AN EXPERIMENTAL MODEL OF HIND LIMB ISCHEMIA IN RATS

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Peripheral artery occlusive disease (PAOD) is a major cause of morbidity and mortality in western countries and there is still no standardized treatment for this pathological condition. Polydeoxyribonucleotide (PDRN) is a compound holding a mixture of deoxyribonucleotide polymers of different lengths and it has been demonstrated to stimulate adenosine receptors and VEGF synthesis in different experimental models.
We investigated the effects of PDRN in an experimental model of hind limb ischemia. Hind limb ischemia was induced in Sprague Dawley male rats by exciding the iliac artery (HLI). Sham operated animals were used as controls (Sham-HLI)
Animals were treated daily with either PDRN (8 mg/kg/i.p.) or its vehicle (a 100 µl 0,9% NaCl solution i.p.). Blood flow was evaluated by using a Laser Doppler Analysis (immediately after ligation and after 7, 14 and 21 days). Furthermore animals were killed on different days (7, 14 and 21 after surgery) to evaluate vascular endothelial growth factor (VEGF) message and protein expression and to histologically assess neo-angiogenesis and the degree of ischemia-induced damage. PDRN administration dramatically increased VEGF mRNA (PDRN= 7.2 ± 0.9 n-fold/β-actin; vehicle= 3.3 ± 0.8 n-fold/β-actin) and protein expression (PDRN= 11.5 ± 1.3 integrated intensity; vehicle = 4.4 ± 0.8 integrated intensity) at day 7. Moreover the compound stimulated new vessel formation (studied by the means of CD31 expression), caused a marked increase in blood flow and prevented ischemia-induced tissue damage. These results led us to hypothesize a role for PDRN in the treatment of PAOD.