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Peripheral and central vascular function alterations caused by unilateral adrenalectomy in rats and effects of BPC 157 pentadecapeptide

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Background: Small blood vessels and endothelium have an essential role in maintaining homeostasis. Pentadecapeptide BPC 157 (BPC157) has been shown to have potent cytoprotective effects by modulating minor blood vessels and protecting the endothelium. We described the role of BPC157 on small blood vessel functioning and endothelial maintenance in acute phases of uADX.

Methods: Deeply anesthetized male Wistar rats (200-250g) were submitted to left uADX. Acute effects in 15 min, 5h and 24h after surgery and pretreatment with 1 mL saline or 1 mL of BPC-157 pentadecapeptide (BPC157) solution applied intraperitoneally were described with ECG, pathoanatomical, pathohistological, invasive blood pressure measurement and thrombosis evaluation in major blood vessels.

Results: As time passed, more prominent signs of vascular failure-related phenomena were evident. Major veins, brain and heart became more congested. Venous pressure rose while aortic pressure fell. ECG showed prolonged QTc interval. PHD assessment showed progressed signs of hemorrhage, congestion, and/or thrombosis centrally and peripherally. Cytoprotection with BPC157 showed a beneficial effect by counteracting the above-mentioned pathologies. Macroscopically and histologically, the remnant adrenal gland was pronouncedly hyperemic with BPC157 treatment, while the control group had an initial physiological hyperemia that converted into congestion.

Discussion/Conclusion: uADX causes a vascular failure-induced peripheral and central syndrome similarly to other noxious procedures. Cytoprotection by BPC157 had a curative role on the syndrome. Acute compensation phases of the remnant adrenal gland have been modified with BPC157, which further elaborates the role of blood vessels on this elusive physiological response. Gene expression analysis, NO and oxidative radical levels will further elaborate these findings.

Biography

They are a group of students mentored by prof. Sikirić, an eminent researcher and scientist in the field of pharmacological cytoprotection.