DIAPOCYNIN vs APOCYNIN: EFFECTS ON VASCULAR REACTIVITY

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Diapocynin is a dimer of apocynin obtained synthetically, both compounds are inhibitors of NADPH oxidase. Diapocynin showed better effects against oxidative stress derived by NADPH oxidase in models of asthma, inflammatory and neurodegenerative diseases, when compared to apocynin. At vascular dysfunction, NADPH oxidase seems to have an essential role in several situations such as hypertension, atherosclerosis and endothelial dysfunction. The objective of this study was to compare the effects of diapocynin (DIAPO) and apocynin (APO) on vascular reactivity of aorta from control rats and in aorta under oxidative stress induced by mercury chloride (HgCl₂) at 6nM. 12 three-month-old male Wistar rats were anesthetized and the thoracic aorta isolated, segmented and mounted on organ bath according to Nielsen & Owman (1971). Vasoconstrictor response to phenylephrine (PHE) in control and HgCl₂-exposed aortas were obtained in presence and absence of apocynin (0.03mM) and diapocynin (0.03mM), after 1 hour of incubation. Data are expressed as mean ± SEM and analysed by two-way ANOVA followed by post-hoc of Bonferroni (P<0.05). Our results showed that diapocynin seems to be more effective than apocynin on inhibition of NADPH oxidase on vascular response to PHE in control aortic segments. However, this effect was not observed in HgCl₂-exposed aortas (Emax % to KCl: Untreated 94.6±1.98, HgCl₂ 111.8±2.1, APO 75.4±3.3, DIAPO 55.3±1, APO+HgCl₂ 62.1±3.2, DIAPO+HgCl₂ 62.8±2.7%). Our results suggest that, in physiological conditions, diapocynin is a stronger NADPH oxidase inhibitor. However, after oxidative stress induced by mercury these difference disappear, which points to another underlying mechanisms involved on vascular dysfunction after HgCl₂-acute exposure.

Key Words: Apocynin, Diapocynin, Vascular Reactivity
Acknowledgements: CNPq, Unipampa.