



VASORELAXANT EFFECTS OF APIGENIN IN RAT AORTA AND PORCINE CORONARY ARTERY: INFLUENCE ON ENDOTHELIAL NITRIC OXIDE EXPRESSION

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INTRODUCTION

Apigenin (AP) is a plant-derived flavonoid with diverse biological activities (SALEHI et al., 2019). Cardiovascular diseases (CVD) are the leading cause of death worldwide, with hypertension as a major modifiable risk factor (MCEVOY et al., 2024). Although AP has demonstrated relevant cardiovascular effects, its role in hypertension remains incompletely understood (ZHOU et al., 2017). This study aimed to investigate the vasorelaxant effects and underlying mechanisms of AP in aortic rings from spontaneously hypertensive rats (SHR) and porcine coronary artery rings, as well as its effects on porcine endothelial cells (ECs).

MATERIAL AND METHODS

To assess vasorelaxation, aortic and coronary rings with and without endothelium (E+/E-) were exposed to cumulative AP concentrations (0.3–1000 µg/mL). Mechanisms involved were also investigated. Nitric oxide (NO) formation in ECs was analyzed via microscopy using the DAF-FM diacetate probe. Rat experiments were approved by the CEUA of the University of Vale do Itajaí (016/22). Porcine hearts were obtained from a local slaughterhouse, eliminating the need for CEUA approval.

RESULTS

AP induced significant relaxation in aortic rings both E+ and E-, achieving over 90% relaxation in E+ rings at a concentration of 1000 µg/mL. In coronary artery rings, a pronounced vasorelaxant effect was observed in both preparations following cumulative AP addition at a concentration of 200 µg/mL. Investigation of the underlying mechanisms revealed the involvement of NO signaling pathways in mediating the vasorelaxant response. Additionally, AP promoted NO production in endothelial cells.

CONCLUSIONS

AP exhibits a strong vasorelaxant potential in both SHR rat and porcine vessels, involving NO-mediated mechanisms. This is further supported by cellular analysis demonstrating increased NO production by endothelial cells in the presence of AP. However, further studies are required to fully elucidate the mechanisms underlying this process.

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