UNIVERSITAT ROVIRA i VIRGILI

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End of Degree Project in Biochemistry and Molecular Biology

Study of the effects of Riociguat, Sildenafil, and Bay 60-2770 upon endothelial function in patients with Chronic Thromboembolic Pulmonary Hypertension

Double Bachelor's Degree in Biotechnology and Biochemistry and Molecular Biology

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This is a confidential study.

Abstract

Chronic thromboembolic pulmonary hypertension (CTEPH) is a severe clinical form of pulmonary hypertension (PH) characterized by chronic obstruction of major pulmonary arteries. Although the pathogenesis of CTEPH remains unclear it has been related to impaired endothelial function, including decreased angiogenesis and apoptosis. This study aimed to investigate the effects of Riociguat, Sildenafil, and Bay 60-2770 on endothelial function in patients with CTEPH. The study assessed endothelial function in a CTEPH-derived cell line (RITME) and compared it with healthy pulmonary artery endothelial (HPAE) cell lines. The results demonstrated that Riociguat, Sildenafil, and Bay 60-2770 exerted significant effects on angiogenic and apoptotic endothelial functions in CTEPH-derived cells, highlighting their potential as therapeutic agents. Furthermore, the study revealed potential similarities between CTEPH and pulmonary arterial hypertension (PAH) in terms of endothelial dysfunction mechanisms and shared pathological processes involving vascular remodeling. Overall, this research contributes to our understanding of endothelial dysfunction in CTEPH and suggests potential therapeutic strategies for managing this challenging condition.