ABT263 (Navitoclax) and the IPF-Treatment Drugs for a Healthier Aging

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Cellular senescence, a permanent proliferative arrest of the cell cycle, is closely associated with aging. Clearing senescent cells may reduce vulnerability to disease and extend lifespan in humans. This project studied the effects of ABT263 (Navitoclax) and the current Idiopathic Pulmonary Fibrosis treatment drugs (Nintedanib and Pirfenidone) on the aging and apoptosis of senescent human fetal lung fibroblasts. In the first experiment, the cells were exposed to various combinations and concentrations of drugs and analyzed for relative concentrations of senescence markers (p16 and pRb) and apoptotic proteins (Cleaved PARP and cleaved caspase 9) by western blots. As ABT263's concentration was increased, cellular cultures seemed to have higher apoptotic rates of the senescent fibroblasts and underwent a healthier aging (both determined by qualitative analysis of western blot images). In the second experiment, the results indicated by Cleaved PARP concentrations showed all 6 treatment types caused significantly different rates of apoptosis, since the F-Test statistic, 3.373, was higher than the critical value, 3.11, with $\alpha = 0.05$. Similarly, according to Cleaved Caspase 9 concentrations, all 6 treatment types caused significantly different rates of apoptosis, since the F-Test statistic, 4.620, was higher than the critical value, 3.11, with $\alpha = 0.05$. The cells receiving the "ABT263 and Nintedanib" treatment or "ABT263 only" treatment had the highest apoptotic rates of all the treatments and underwent the healthiest aging of all the cellular cultures. Keywords: Senescence, ABT263, Navitoclax, Aging, Nintedanib, Pirfenidone, age-related disease, IPF, Apoptosis, Cleaved Caspase 9, pRb, p16, Cleaved PARP

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Second Award of $2,000