Meloxicam: A Potential Treatment for Idiopathic Pulmonary Fibrosis

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Idiopathic Pulmonary Fibrosis (IPF) is a lung disease that results in scarring (fibrosis) of the lungs with no known cause. Over time, the scarring becomes so severe that breathing becomes impossible. The life expectancy of those diagnosed with IPF is only 3-5 years. Current treatment options are limited with no known cure. Meloxicam is an economical drug currently used to treat chronic conditions such as arthritis and works by reducing hormones in the body that are responsible for pain and inflammation. One protein that is over-expressed in the IPF condition is fibronectin (which aids in normal tissue healing), and contributes to the hardening of the lung tissue in IPF. I hypothesized that Meloxicam would decrease the concentration of fibronectin in mouse fibroblasts treated with Transforming Growth Factor Beta (TGFB) (used to mimic the IPF diseased condition in the lab as it is a stimulator of fibronectin production). To conduct these experiments, I added increasing concentrations of Meloxicam (200uM-800 uM) in mouse fibroblasts treated with TGFB. I also included Nintedanib, a current but expensive treatment drug for IPF as a positive control for the experiments. After incubation of the fibroblasts with the drugs, the cells were lysed, protein concentrations equalized, and final fibronectin concentrations determined using an Enzyme-Linked Immunosorbant Assay (ELISA). My results demonstrate that Meloxicam did decrease fibronectin production, especially at the highest dose of 800 uM. These exciting preliminary findings show that Meloxicam could be a potential, less expensive drug candidate for the treatment of IPF.