

Poster Presentations — B25

PDGF-Induced DNA Synthesis in Human Lung Fibroblast is Inhibited by Lidocaine

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Introduction: Fibroblasts are intricately involved in the process of inflammation and repair in the lung. Platelet-derived growth factor (PDGF) is a well known mitogen that induces DNA synthesis and proliferation in lung fibroblasts. There is growing evidence that lidocaine (and other local anesthetics) have direct anti-inflammatory and antiproliferative properties. This effect may be useful in acute and chronic inflammatory states as demonstrated by a beneficial role in acute lung injury (in vivo animal model) and possible steroid sparing effect in steroid-dependant asthmatics. This investigation aims to study the effect of lidocaine on PDGF-induced DNA synthesis in human lung fibroblasts (HLF) in the presence or absence of small concentrations of fetal bovine serum (FBS).

Methods: We investigated the inhibitory effect of lidocaine on the proliferation of HLF by measuring basal and PDGF-induced DNA synthesis in the presence of lidocaine. Confluent, quiescent, HLF (ATCC;CCL153) were treated with PDGF-BB 10 ng/ml, PDGF-BB 10 ng/ml + 0.25% FBS, PDGF-BB 10 ng/ml + 0.5% FBS, in the absence and presence of lidocaine (10^{-5} M, 10^{-4} M, 10^{-3} M and 5×10^{-3} M) for 12-16 hours. 3 H-Thymidine incorporation was measured. Data is presented as counts/mg DNA \forall SEM and analyzed using ANOVA. $P < 0.01$ considered significant.

Results: Lidocaine (10^{-5} M, 10^{-4} M, 10^{-3} M and 5×10^{-3} M) decreases PDGF-induced DNA synthesis in HLF. The inhibitory effect of lidocaine was observed even in the presence of FBS 0.25% and 0.5% (Table).

AGENT	Agent(A) Only	A+Lido 10^{-5} M	A+Lido 10^{-4} M	A+Lido 10^{-3} M	A+Lido 5×10^{-3} M	N (*= $p < 0.01$)
Control (No FBS)	337 \forall 44	260 \forall 44	276 \forall 32	240 \forall 30	135 \forall 11*	5
PDGF-BB 10ng/ml	962 \forall 44	716 \forall 49*	709 \forall 32*	579 \forall 18*	166 \forall 12*	5
PDGF-BB-0.25% FBS	507 \forall 86	179 \forall 14*	144 \forall 11*	82 \forall 10*	40 \forall 2*	5
PDGF+0.5% FBS	199 \forall 23	134 \forall 15*	99 \forall 19*	66 \forall 4*	24 \forall 2*	5

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