COX isoforms in aortic endothelial cells from young adult and mature adult mice

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In the endothelium of the aorta there are athero-prone (**h**igh **p**robability/**HP**) or athero-protected (**l**ow **p**robability/**LP**) regions, dictated by the type of flow they experience. We have previously shown that cyclo-oxygenase (COX)-1 predominates in the endothelium of both areas in young adult mice (3 months). Debate continues regarding the levels of COX-1 versus COX-2 expression in the vasculature. Vascular function and enzyme expression changes as animals age. Thus, in the current study we have compared levels of COX-1 and COX-2 expression in HP and LP regions of aortic arch in tissue from young adult (3 month) and mature adult (12 month) C57Bl6 mice. We have also measured COX activity (as $5x10^{-5}$M A23187-stimulated prostacyclin release, 30 minutes; measured by RIA of its breakdown product, 6-keto$PGF_{1\alpha}$) in aorta from 3, 6 and 12 month colony wild type (C57Bl6) versus COX-1 knockout (COX-$1^{-/-}$) mice.

Figure 1:

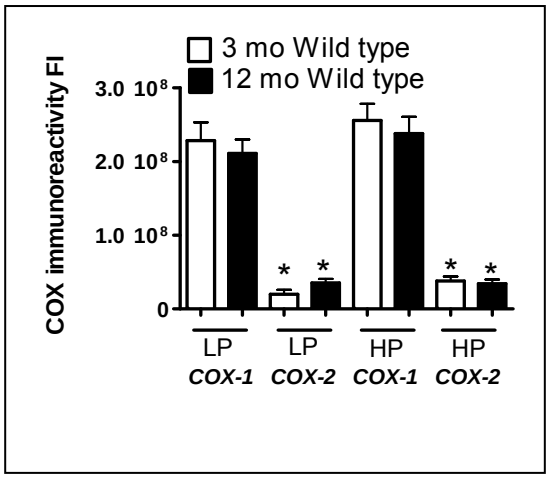

Figure 2

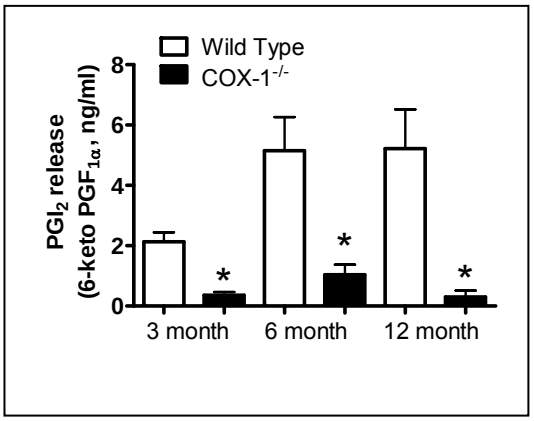

Figure 1: COX-1 immunoreactivity was high in endothelial cells of all regions of the aortic arch. COX-2 immunostaining was lower in all regions and at both ages. There was no significant (ns) difference in COX-1 or COX-2 immunoreactivity between the two age groups. Data is mean ± S.E.M for n=8-18 images for separate regions of tissue from 6 (3mo) and 4 (12mo) mice. Data was analysed using student's unpaired t-test. Figure 2: COX activity in aorta from 3, 6 and 12 month old wild type and COX-$1^{-/-}$. Data is mean ± S.E.M for n=4-7. Within group analysis was performed using two-way ANOVA followed by Bonferroni post-test. Significant differences were assumed were P>0.05 and denoted by.*

Our results demonstrate that while both COX-1 and COX-2 are present in the endothelium of healthy young and mature mice, COX-1 immunoreactivity and activity predominates in all age groups tested.