P22 **BH4 DEFICIENCY REDUCES VASCULAR REPAIR IN THE RETINA**

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Purpose Intravitreal neovascularisation (NV) is a serious complication of diabetic retinopathy and occurs in response to tissue ischaemia and VEGF stimulation. eNOS derived NO plays an important role in facilitating VEGF function during NV. Efficient NO production is dependent upon the cofactor tetrahydrobiopterin (BH4) whose deficiency plays a pivotal role in the reduced NO bioavailability observed in diabetic vascular disease. Its role, however, in retinal angiogenesis is still poorly understood. Here, using a murine model partially deficient in BH4 (hph-1), we investigated the role of BH4 in ischaemic retinopathy following oxygen induced retinopathy (OIR).

Methods Aortic rings from adult mice or retinas from postnatal day 7 (P7) animals were used to estimate endothelial branch formation and normal vascular coverage. For OIR, animals were exposed to 75% oxygen for 5 days from P7 to P12 and returned to room air. Eyes were collected at various time points between P12 and P17 (maximal neovascular response) and vascular growth quantified by *B simplicifolia* isolectin staining of retinal flat mounts. Avascular, normal vascular and neovascular areas were quantified using image analysis software. BH4 deficiency was confirmed by HPLC analysis.

Results Vascular growth in the absence of BH4 was significantly reduced in aortic explants derived from hph-1 animals which was reversible upon BH_4 supplementation. Retinal vascular development was unaffected in the hph-1 group. However, post OIR, they demonstrated reduced retinal revascularisation and neovascularisation at P17.

Conclusions Taken together, our results show that BH4 deficiency attenuates angiogenic drive and neovascularisation in a model of retinal pathology.