**A Double-blind Placebo-controlled Randomised Study of the Effects of Candesartan Versus Amlodipine On Capillary Rarefaction In Essential Hypertension**

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Background: A reduction in the density of capillaries (rarefaction) is known to occur in many tissues in patients with essential hypertension (HTN) and plays a crucial role in increasing peripheral resistance and blood pressure (BP). The aim of this clinical trial was to assess in a controlled, double blind, placebo-controlled design the effects of treatment of HTN with candesartan or amlodipine on microvascular rarefaction and other indices of vascular function in individuals with mild-to-moderate essential HTN.

Methods: The capillary microcirculation was studied using the well-validated intravascular microscopy technique. After a 2-week single-blind placebo run-in period, patients who remained hypertensive (systolic BP 140–180 mmHg and/or diastolic BP 90 -110 mmHg) were randomised to 8-weeks treatment with either candesartan 8mg daily (with forced titration to 16mg after 2 weeks) or amlodipine 5mg orally daily (with forced titration to 10mg after 2 weeks). Other vascular measurements included pulse wave velocity with Complior machine, central BP and Aortic Augmentation Index measurements with Omron HEM-9000AI machine.

Results: Treatment with candesartan and amlodipine significantly reduced both brachial and central BP at 4 and 8 weeks (mean change -19.0 mmHg; 95% CI -11.1 to -26.9, p<0.0001), and to 8 weeks active treatment (mean change -26.3 mmHg; 95% CI -17.5 to -35.0, p<0.0001) but had no significant effect on basal (functional) or maximal (structural) capillary densities. Both drugs also reduced central BP and Aortic augmentation index significantly after 4 and 8 weeks but there was no significant changes in PWV.

Conclusions: The study confirms that 8 weeks treatment with either candesartan or amlodipine significantly reduces radial and central BP in essential HTN but may not be a sufficient circumstance for inducing a regression in microvascular abnormalities.