**The acute effect of inhaled salbutamol and ipratropium on microvascular function**

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**Background:** Cardiovascular disease is common in chronic obstructive pulmonary disease but little is known about its effect on capillary rarefaction, a marker of microvascular function. Both inhaled salbutamol and ipratropium can induce systemic haemodynamic changes acutely potentially confounding measurements of capillary rarefaction.

**Aim:** To investigate the acute effect of inhaled salbutamol and ipratropium on changes in skin capillary density, a marker of capillary rarefaction and microvascular function.

**Methods:** 27 healthy normotensive adults 19-24 years were recruited into a crossover study receiving inhaled salbutamol 400 micrograms or ipratropium 160 micrograms via a spacer in random order at least 24 hours apart. Spirometry and functional skin capillary density were assessed before and after drug administration. A subgroup of participants also had capillary density measured after venous congestion to assess maximal (structural) capillary density.

**Results:** There was no significant difference in functional capillary density after salbutamol or ipratropium (mean±SD, 57±13 to 60±11 per field; p=0.205, n=23, and 57±13 to 54±12 per field; p=0.138, n=23, respectively). However, salbutamol significantly increased maximal skin capillary density compared to baseline (58±12 to 71±15 per field; p=0.009, n=10) whereas ipratropium had no effect (58±12 to 61±12 per field; p=0.663, n=9).

**Conclusions:** Inhaled salbutamol has a significant effect on capillary rarefaction. This may be attributable to vasodilatation of resistance arterioles. When performing capillaroscopy in conjunction with post-bronchodilator spirometry, ipratropium may be the bronchodilator of choice due to its lack of acute effect on vascular tone.