

Scientific Abstract Sample

The skin blood flow (SkBF) response to local heating is reduced in healthy older (O) vs. young (Y) subjects; however, the mechanisms that underlie these age-related changes are unclear. Local skin heating causes a bimodal rise in SkBF involving at least two independent mechanisms: an initial peak mediated by axon reflexes and a secondary slower rise to a plateau which is mediated by the local production of nitric oxide (NO).

PURPOSE: To determine the altered mechanism(s) underlying the attenuated SkBF response to local heating in aged skin. **METHODS:** Two microdialysis fibers were placed in the ventral skin of the forearm of 10 Y (22±2 yrs) and 10 O (77±5 yrs) subjects. SkBF over each site was measured by laser-Doppler flowmetry as the skin over both sites was heated to 42° C for ~60 min. At one site, 10mM L-NAME was infused throughout the protocol to inhibit NO-synthase (NOS). At the second site L-NAME was infused after 40 min of local heating. Cutaneous vascular conductance (CVC) was calculated as flux/mean arterial pressure and scaled as % maximal CVC (infusion of 50mM sodium nitroprusside). Age comparisons were made using two-way ANOVA with repeated measures.

RESULTS: Maximal CVC was reduced in the O (156±15 vs. 192±12 mV/mmHg, $p<0.05$), as were the initial peak (46±4 vs. 61±2% max, $p<0.05$) and plateau (82±5 vs. 93±2%, $p<0.05$) responses. The decline in CVC with NOS inhibition during the plateau phase was similar in the Y and O groups but the initial peak was significantly lower in O when NOS was inhibited prior to local heating (38±5 vs. 52±4%, $p<0.05$). **CONCLUSION:** Age-related changes in both axon reflex-mediated and NO-mediated vasodilation contribute to the diminished vasodilator response to local heating in aged skin.