

POSTER 85

INSULIN-MEDIATED INCREASES IN ARTERIAL BAROREFLEX CONTROL OF MUSCLE SYMPATHETIC NERVE ACTIVITY FOLLOWING MEAL INTAKE IN HUMANS

Lauro C. Vianna (Post Doctoral Fellow)

Colin N. Young, PhD

Catherine R. Mikus (Doctoral Student)

John P. Thyfault, PhD

(Paul J. Fadel, PhD)

Department of Medical Pharmacology and Physiology
Dalton Cardiovascular Research Center

Animal studies indicate that insulin enhances arterial baroreflex (ABR) control of sympathetic nerve activity (SNA); however, the extent to which these findings can be extrapolated to humans is unknown. To begin to address this, we utilized a mixed meal as a physiological method to evoke sustained increases in plasma insulin. Muscle SNA and arterial blood pressure (BP) were measured in 10 subjects (25 ± 2 yr) before and for 120 minutes following mixed meal intake. Weighted linear regression analysis between muscle SNA and diastolic BP was used to determine the gain (i.e. sensitivity) of ABR control of SNA. Plasma insulin was significantly elevated within 30 minutes following meal intake ($\Delta 29 \pm 7$ uIU; $P < 0.05$) and remained above baseline for up to 120 minutes. Similarly, 30 minutes after meal intake, ABR gain of muscle SNA burst incidence (-3.31 ± 0.64 vs. -5.13 ± 0.95 bursts/100 heart beats/mmHg; baseline vs. 30 min, $P < 0.05$) and total muscle SNA (-3.22 ± 0.60 vs. -5.89 ± 1.30 arbitrary units/beat/mmHg; baseline vs. 30 min, $P < 0.05$) was increased and remained elevated for the duration of the protocol. BP was unchanged by meal intake. In a subset of subjects the ABR muscle SNA gain remained unchanged during time control experiments. These preliminary findings suggest that increases in plasma insulin following meal intake enhance the gain of ABR control of muscle SNA in healthy humans.

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