31st Annual Sports, Cardiovascular, and Wellness Nutrition Symposium, Colorado Springs, Colorado, Apr 30th-May 2nd, 2015

Relationship Between Serum $\delta^{13}C$, Self-Reported Dietary Added Sugar Intake and Cardiovascular Outcomes in young Adults

Tanya M. Halliday, RD[1], Sarah V. Lui[1], A. Hope Jahren, PhD[1], Joshua N. Bostic, BS[1], Kevin P. Davy, PhD[1], *Brenda M. Davy, PhD, RD[1]

1. Human Nutrition, Foods, and Exercise, Virginia Tech, Blacksburg, VA
2. School of Earth and Ocean Science and Technology, University of Hawaii, Honolulu, HI

Elevated added sugar (AS) intake has been implicated in the development of cardiovascular disease (CVD), yet limitations inherent to measures of self-reported dietary intake have created controversy and prevented development of conclusive AS intake recommendations. Recently, development of a biomarker for AS intake, δ13C, has shown promise in predicting dietary AS intake and could be used to more accurately determine the relationship between AS intake CVD risk. The purpose of this investigation was to determine if serum δ13C is correlated with added sugar intake and CVD risk factors. Habitual AS intake, δ13C, carotid-femoral pulse-wave velocity (c-f PWV; a comprehensive indicator of CV health), blood pressure and lipids were assessed in 64 healthy, sedentary-to-recreationally active adults (60% male, 70% Caucasian; age: 26±0.7 yrs, BMI: 24±0.4 kg/m2). AS intake was determined using 3-4 day food recalls or records, δ13C values were analyzed using natural abundance stable isotope mass spectrometry, and C-f PWV (calculated as: pulse wave travel distance/pulse wave travel time) was determined using applanation tonometry. Mean self-reported AS intake was 69±5g/d (12% total energy intake), serum δ13C was -19.7±0.1‰, and c-f PWV was 590±21 cm/s. AS intake was positively correlated with δ13C ($r=0.273$, $p=0.03$) and inversely correlated with HDL (-0.310, $p=0.01$). δ13C was positvely correlated with systolic blood pressure ($r=0.421$, $p=0.001$) and BMI (0.258, $p=0.04$). Unexpectedly, self-reported AS intake and δ13C were inversely correlated with total cholesterol, and δ13C was inversely correlated with triglycerides and VLDL (all $p<0.05$). Neither self-reported AS intake nor the δ13C biomarker were correlated with c-f PWV ($p>0.05$). These preliminary results suggest that cross-sectional reliance on self-reported AS intake or the δ13C biomarker may have limited effectiveness in predicting CVD risk in a healthy, young population. Future research should evaluate the influence of AS intake on CV health in a broader population over multiple time points.