**COCOA FLAVANOLS FOR PREVENTION OF DIABETES**

**L. Wang**

Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA

Recent research has demonstrated multiple health benefits of cocoa products, which are mainly attributed to the high content of flavonoids, particularly flavanols. A large body of evidence indicates that dietary intake of cocoa and flavanol-rich chocolate (as dark chocolate) may reduce the morbidity and mortality of cardiovascular disease (CVD) and related cardiometabolic disorders including type 2 diabetes (T2D). Experimental studies show beneficial effects of cocoa flavanols on glucose and insulin metabolism. Prospective cohort studies found a reduced risk of T2D with greater intake of flavanols. Meta-analyses of cohort studies and small-scale, short-term trials that assessed the effects of cocoa, chocolate, or flavanol intake on CVD risk factors reported that flavanols from cocoa may improve glucose homeostasis, insulin sensitivity, and beta-cell function. We recently conducted an updated meta-analysis of randomized, controlled trials (RCTs) published from January 1965 to December 2015 and found similar results. Pooled data from a total of 19 RCTs showed that the weighted mean differences (WMD) and 95% confidence intervals (95% CI) of glycemic biomarkers comparing active cocoa flavanol supplement with placebo were -2.33 uIU/mL (95% CI: -3.47, -1.19) for fasting insulin, -0.93 (95% CI: -1.31, -0.55) for homeostatic model assessment of insulin resistance (HOMA-IR), 0.03 (95% CI: 0.01, 0.05) for quantitative insulin sensitivity check index (QUICKI), and 2.54 (95% CI: 0.63, 4.44) for insulin sensitivity index (ISI). Although accumulating evidence suggests a clinically important effect of cocoa flavanols on reducing T2D risk and improving glycemic measures, along with other biological benefits, existing data from clinic trials are limited by the small sample size, short duration, cross-over design, a wide range of flavanol doses, and method of intervention. There is need for large-scale, long-term RCTs that directly evaluate the effects of cocoa flavanols on T2D risk and other related chronic disease outcomes.