The research and evidence base for the safety and efficacy of nonnutritive sweeteners [NNS] spans several decades. This review of recent publications is provided by McNeil Nutritionals, LLC, the manufacturer of SPLENDA® Sweetener Products.

HEALTH AND PROFESSIONAL ASSOCIATION STATEMENTS


Position Statement: “Use of nonnutritive sweeteners (NNS) has the potential to reduce overall calorie and carbohydrate intake if substituted for caloric sweeteners without compensation by intake of additional calories from other sources.” This ADA statement refers to the safety review and approval of NNS by the FDA. Regarding glycemic effect, the statement concludes research supports that NNS do not produce a glycemic effect unless other carbohydrate containing ingredients are in the product. www.diabetesjournals.org (http://care.diabetesjournals.org/content/36/11/3821.full.pdf+html)


Summary: This statement, which reviewed evidence since 2005, concludes reducing the intake of added sugars is an important intervention to achieve a healthy weight and nutrient-dense dietary pattern. The statement also concludes that using NNS may result in small decreases in calorie intake and weight loss when used within a structured eating plan and without caloric compensation. www.circ.ahajournals.org (http://circ.ahajournals.org/content/early/2012/07/09/CIR.0b013e31825e42ee.citation)

Snacks, Sweetened Beverages, Added Sugars, and Schools – American Academy of Pediatrics Policy Statement from Council on School Health, Committee on Nutrition. 2015;135(3) (e-pub)

Position Statement: This policy statement addresses childhood obesity with a focus on federal, state and local school nutrition regulations and policies. About NNS the policy states: “Additional improvements in nutrient density of sweet-tasting products could be obtained if nonnutritive sweeteners are used as a tool to replace added sugars and help lower caloric intake. Several nonnutritive sweeteners have been accepted by the US Food and Drug Administration as safe and have shown good safety over time. However, data are scarce on long-term benefits for weight management in children and adolescents or on the consequences of long-term consumption. Continued research is needed.” www.aap.org (http://pediatrics.aappublications.org/content/early/2015/02/17/peds.2014-3902.full.pdf+html)


Position Statement: “It is the position of the Academy of Nutrition and Dietetics that consumers can safely enjoy a range of nutritive and nonnutritive sweeteners when consumed within an eating plan that is guided by current federal nutrition recommendations, such as the Dietary Guidelines for Americans and the Dietary Reference Intakes, as well as individual health goals and personal preference.” www.eatright.org (http://www.eatright.org/About/Content.aspx?id=8363)

American Cancer Society: Guidelines on Nutrition and Physical Activity for Cancer Prevention

Position Statement: “There is no proof that these sweeteners, at the levels consumed in human diets, cause cancer… Current evidence does not show a link between these compounds and increased cancer risk…” www.cancer.org (http://www.cancer.org/healthy/eathealthylivingactive/acsguidelinesonnutritionphysicalactivityforcancerpredvention/acs-guidelines-on-nutrition-and-physical-activity-for-cancer-prevention-common-questions)

META-ANALYSIS AND REVIEW ARTICLES


Summary: This meta-analysis, which analyzed results from randomized control trials (RCTs) and prospective cohort studies on NNS and body weight, fat mass, BMI, and waist circumference, showed that in RCTs NNS reduced body weight compared to placebo and modestly, but “significantly” reduced BMI, fat mass, and waist circumference. The meta-analysis was accompanied by the editorial, www.ajcn.nutrition.org (http://ajcn.nutrition.org/content/100/3/765.full.pdf+html)


Summary: This paper, which analyzed research about how human consumption of NNS may change the appetite for and intake of sweet tasting products, draws several conclusions: 1) no consistent relationship exists to demonstrate a heightened appetite for sweet foods, 2) some research shows use of NNS is associated with consumption of less sweets, 3) intervention studies in children and adults show use of NNS can reduce intake of caloric sweeteners and support weight loss efforts. http://link.springer.com/article/10.1007%2Fs13679-014-0133-8
GLYCEMIC RESPONSE AND GLUCOSE CONTROL


Summary: This study examined the individual effect of acesulfame-K (AceK), aspartame and saccharin responses on glycemia and appetite in humans when consumed in combination with glucose in commonly used amounts. Results showed no additional effect of aspartame or saccharin on glucose response any time during the 60 minute post-ingestion period. No NNS individually had an effect on perceptions of hunger or fullness.
www.nature.com (http://www.nature.com/ejcn/journal/v68/n5/full/ejcn201419a.html)


Summary: This study fed four different drinks to healthy men: 1) water, 2) water with sucralose, 3) water with acesulfame-K (AceK), and 4) water with both sucralose and AceK. 10 minutes after consumption, a 75 gram oral glucose load was administered. Results: neither sucralose alone, nor when combined with AceK, had any acute effect on gastric emptying, GLP-1, or glycemic responses.
www.diabetesjournals.org (http://care.diabetesjournals.org/content/36/12/e202.extract)

WEIGHT MANAGEMENT, DIET QUALITY, HUNGER AND APPETITE


Summary: This 12 week weight control RCT with 9 month maintenance phase had a study group instructed to drink 24 fl oz/day diet beverages (any type) and a control group instructed to drink 24 fl oz/day of water (instructed not to drink diet beverages). Results: diet beverage group lost significantly more weight, average of 13 pounds, or 44 percent more than control group (average 9 pounds). 64% of study group lost >5% of body weight, compared with 43% of control group. Diet beverage group experienced significantly less hunger.


Summary: The CHOICE study by Tate, et al. was a 6-month RCT with 3 groups: 1) diet beverage, 2) water or 3) control. Eligible subjects had to consume > 280 kcal/day of sweetened beverages and commit to making a dietary change. Diet beverage and water groups substituted >2 servings/day of sweetened beverage with a diet beverage or water, respectively. Results: At 6 months diet beverage drinkers were more likely to achieve a 5% weight loss than water drinkers. A secondary analysis by Piernas, et al., showed both study groups reduced total energy, carbohydrate, and added sugars. Diet beverage group participants reduced desserts consumption more than water drinkers.
Tate: http://ajcn.nutrition.org/content/95/3/555.abstract?sid=e59cd377-7289-4844-bbfe-9a2def4f441a
Piernas: http://ajcn.nutrition.org/content/97/3/604. abstract?sid=e570b5e2-88a1-40a4-992a-349067f02625


Summary: This study surveyed consumption of beverages with NNS in NWCR members with sustained weight loss for > 7 years. Results: 53% regularly consumed NNS beverages, 10% regularly consumed sugar-sweetened beverages (SSB), 78% of NNS consumers reported they helped control calorie intake. Choice of beverage was “very important” for weight loss (42%) and maintenance (40%).


Summary: This study analyzed NHANES data from 22,000 participants’ between1999-2008 who consumed beverages, foods and tabletop sweeteners with NNS. The USDA’s Healthy Eating Index was used to measure diet quality. Results: people who use NNS have a higher HEI than non-consumers largely explained by lower calorie intake from solid fats, added sugar and alcohol. NNS users were found to practice other healthy lifestyle behaviors, such as physical activity, and less tobacco and alcohol use.
www.mdpi.com (http://www.mdpi.com/2072-6643/6/10/4389/htm)


Summary: Participants in this study took part in a series of taste tests with various caloric and nonnutritive sweeteners. Participants rated perceived sweetness. Results: participants perceived the sweetness of NNS at lower concentrations than the caloric sweeteners and indicated caloric sweeteners all had higher sweetness ratings than NNS. Researchers conclude results don’t support the claim that NNS produce a negative effect by over-stimulating peoples’ sweet taste receptors to produce supernormal stimuli.
www.nature.com (http://www.nature.com/ijo/journal/v39/n2/full/ijo2014109a.html)

The literature cited here is consistent with the body of research demonstrating that NNS can be used safely and efficaciously when used as part of a healthy eating plan. Using NNS, including SPLENDA® Sweetener Products, which contain sucralose can assist people attempting to manage their weight and/or glucose control by helping them reduce their intake of calories, total carbohydrate and added sugars and improve adherence.