Obesity and type II diabetes (T2D) have reached epidemic proportions. While the underlying etiology is complex, both have been associated with and may be exacerbated by a variety of factors, including hyperglycemia and oxidative stress. The literature has also suggested that the consumption of some artificial sweeteners, such as Saccharin and Sweet and Low® (SWL), and its active ingredient sucrose (SCR), may contribute to these conditions.

Association have both endorsed the use of non-nutritive artificial sweeteners (NNS) including the reduction of caloric intake. The American Heart and Diabetes Association has even suggested that the consumption of NNS may disrupt both glucose and lipid metabolism.

Microscopy imaging. Nuclear localization of DAF-16 expression was observed in all SWL and SAC concentrations showed significantly more lipid accumulation, than the control (CN), and 10mM or 30mM of glucose (GLU), 10mM and 30mM of Splenda® (SPL), and its active ingredient sucrose (SCR).

Hence, NNS are altering both glucose and lipid metabolism, although the mechanism is still under investigation.

SWEETENER CONSUMPTION: NNS present in more foods, among younger generations.

QUANTIFICATION OF E. COLI EXPERIMENTAL DESIGN:

EFFECTS OF NON-NUTRITIVE SWEETENERS ON LIPID ACCUMULATION ON CAENORHABDITIS ELEGANS

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Abstract #2259

ABSTRACT:

Glucose or control (25d SPL, 27d SCR vs. 17d CN and 13d GLU). These results indicate that NNS are altering both glucose and lipid metabolism, although the mechanism is still under investigation.

Sugar intake is decreasing. While the impact on the role of diet has increased, so has the prevalence of NNS in a side variety of products, including those marketed toward children. Studies have suggested that NNS consumption has increased in children, along with the increased prevalence of obesity in this population.

However, NNS have been shown to have various effects on human health, including changes in glucose and lipid metabolism. These changes have been linked to the Insulin Signaling pathway (IGF-1).

The EZL356 strain of C. elegans, which has a GFP tagged DAF-16, was exposed to different concentrations of the sweeteners to determine if the consumption of sweeteners has any impact on the expression of the DAF-16 gene.

The lifespan of all groups showed similar quantitative results for lipid accumulation; although, the method is still under investigation.

LONGEVITY ARRAY:

Figure 10:

In the control, control, and control exposed to 10mM and 30mM of sweeteners, the lifespan of all sweetener treated groups showed an increased lipid accumulation. All treatment groups show a similar increase. The lifespan comparison made the control, and the sweetener treated groups exhibited the longest lifespan, then control, and the sweetener treated groups showed a greater increase in lipid accumulation than 10GLU.

CONCLUSION:

Some associations have both endorsed the use of non-nutritive artificial sweeteners (NNS) including the reduction of caloric intake. The American Heart and Diabetes Association has even suggested that the consumption of NNS may disrupt both glucose and lipid metabolism, although the mechanism is still under investigation.

SWEETENER CONSUMPTION:

Treatments consisted of control (CN), and 10mM or 30mM of glucose (GLU), 10mM and 30mM of Splenda® (SPL), and its active ingredient sucrose (SCR).

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