**Title:** The bitter truth about artificial sweeteners in diabetes mellitus.

Reducing sugar consumption is a target of global health policy for diabetes prevention and management. The promise of “sweetness” without energy has heralded the rapid rise of artificial sweeteners, with their consumption increasing from a half to two thirds of young Australians between 1994 and 2004. The substitution of sugar by sweeteners is prevalent in diabetes mellitus, where their use conceivably abets treatment. Unfortunately, large epidemiological studies indicate a diabetogenic effect of artificial sweeteners, with habitual use associated with a higher risk of developing type 2 diabetes.

Sweet taste is mediated by oral “sweet taste receptors.” These same receptors are present in various organs, and could conceivably be stimulated by artificial sweeteners to induce effects beyond sweet taste. The potential complications of habitual consumption of sweeteners extend beyond diabetes risk, including obesity, cardiovascular disease, cancer risk and detrimental effects on offspring. However, current evidence is conflicting and confusing, and the exact mechanisms of how artificial sweeteners mediate adverse effects are uncertain. Furthermore, the various types of artificial sweeteners differ widely in their degree of absorption from the gut and metabolic fate, and thus evidence may not easily be translated from one sweetener to another. Under such circumstances it is challenging for health care providers to adequately counsel patients regarding artificial sweetener consumption.

An overview of the evidence for and against the use of artificial sweeteners in diabetes mellitus, culminating in an approach to patient counselling and future research directions, will be presented alongside a case of a young adult male with type 1 diabetes mellitus who noted contrasting glycaemic profiles following the consumption of different artificial sweeteners.