CHAPTER 14

Steviol glycosides in purified stevia leaf extract sharing the same metabolic fate

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ABSTRACT

Though rebaudioside A and stevioside are generally the major components in stevia leaf extract, a large number of minor steviol glycosides have been identified and characterized recently. The safety of steviol glycosides is based on toxicology data available on several individual steviol glycosides (stevioside, rebaudioside A and rebaudioside D) and on the terminal absorbed metabolite, steviol, which is generated in the colon by sequential cleavage of the glycosidic side chains by gut microflora. In vitro incubation assays with human fecal isolates, using rebaudiosides A, B, C, D, E, F, and M, as well as steviolbioside and dulcoside A, at concentrations of 0.2 and/or 2.0 mg/mL over 24-48 hours, were conducted to assess the metabolic fate of various steviol glycoside classes and to demonstrate that likely all steviol glycosides are metabolized to steviol. The data show that glycosidic side chains containing glucose, rhamnose and glucose, and xylose and glucose, including combinations of different covalent linkages, were degraded to steviol mostly within 24 hours. Given a common metabolite structure and a shared metabolic fate, safety data available for individual steviol glycosides can be used to support safety of purified steviol glycosides in general. Therefore, steviol glycosides specifications adopted by the regulatory authorities should include all steviol glycosides belonging to the five groups of steviol glycosides and a group acceptable daily intake established.

KEYWORDS: rebaudiosides; steviol glycosides; in vitro metabolism; anaerobic; human; safety, stevia leaf extract.