AUSTRALIAN BEVERAGES COUNCIL

A1176 Enzymatic Production of Steviol Glycosides

4 October 2019

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Executive Summary

The Australian Beverages Council is the peak body representing the collective interests of the non-alcoholic beverages industry. The unified voice of the Australian Beverages Council offers our Members a presence far beyond individual representation in order to promote fairness in the standards, regulations, and policies concerning non-alcoholic beverages.

The Australian Beverages Council and its Members have been working to reduce the amount of sugar in the food supply for a number of years. This year, we announced the Australian Beverages Council sugar reduction pledge, which aims to reduce sugar by 20 per cent across the industry's portfolio by 2025.

The non-alcoholic beverage industry requires flexibility and opportunity to innovate in order to provide consumers with an even greater choice of high quality low and no sugar beverages. Rebaudiosides have been shown to be more palatable than some other glycosides.

The Australian Beverages Council supports the following:

1. inclusion of steviol glycosides (Reb D, Reb M and Reb AM) produced from enzymatic conversion using specific enzymes derived from genetically modified (GM) strains of E. coli.

2. addition of the protein engineered enzymes UDP-glucosyltransferase and sucrose synthase, sourced from (GM) E. coli as processing aids to produce Reb D, Reb M or Reb AM enzymes in Schedule 18 of the Food Standards Code.

About the Australian Beverages Council

The Australian Beverage Council Limited [ABCL] is the leading peak body of the non-alcoholic beverages industry. We represent approximately 90 per cent of the industry's production volume, and our member companies are some of Australia's largest drinks manufacturers. We also represent many small and medium-sized companies across the country. Collectively, our Members contribute more than $7 billion to the Australian economy and nationally our Members employ over 46,000 people.

We strive to advance the industry as a whole, as well as successfully representing the range of beverages produced by our Members. These include carbonated soft drinks, energy drinks, sports and electrolyte drinks, frozen drinks, bottled and packaged waters, juice and fruit drinks, cordials, iced teas, ready-to-drink coffees, flavoured milk products and flavoured plant milks.

The unified voice of the ABCL offers our Members a presence beyond individual representation to promote fairness in the standards, regulations, and policies concerning non-alcoholic beverages. We play a role in educating people on making informed choices encouraging balance, moderation and common sense. We are an advocate on issues such as portion sizes, nutritional labelling, industry marketing and advertising, and canteen guidelines. Our Members listen to consumers and adapt their products accordingly by making positive changes and standing by a commitment to promote greater choice, smaller portions and more products with low or no kilojoules. The ABCL is an important conduit between the non-alcoholic beverages industry and Government, supporting both Australian Government and State/Territory initiatives.

The ABCL introduced a dedicated juice division, Juice Australia (formerly Fruit Juice Australia), in 2009 and in 2011 a dedicated water division, the Australasian Bottled Water Institute [ABWI].

Background

It is understood that Food Standards Australia New Zealand [FSANZ] has assessed an application by PureCircle to amend the Australia New Zealand Food Standards Code [FSC] to the specification for steviol glycosides from Stevia rebaudiana Bertoni (S3—35) to include steviol glycosides (Reb D, Reb M and Reb AM) produced by an enzymatic conversion method using specific enzymes derived from GM strains of E. coli; and also to amend Schedule 18 permitting the use of the protein-engineered enzymes UDP-glucosyltransferase and sucrose synthase sourced from GM E. coli as processing aids.

FSANZ risk assessment concluded neither the Reb D, Reb M and Reb AM produced by an enzymatic conversion method, or the use of the protein engineered enzymes UDP-glucosyltransferase and sucrose synthase, sourced from GM E. coli, used in the manufacture of these steviol glycosides pose a public health and safety risk.

The Australian Beverages Council's Position and Issues for Consideration

The ABCL acting on behalf of the non-alcoholic beverages industry in Australia would like to indicate its support for the

1. inclusion of steviol glycosides (Reb D, Reb M and Reb AM) produced from enzymatic conversion using specific enzymes derived from genetically modified (GM) strains of E. coli.

2. addition of the protein engineered enzymes UDP-glucosyltransferase and sucrose synthase, sourced from (GM) E. coli as processing aids to produce Reb D, Reb M or Reb AM enzymes in Schedule 18 of the Food Standards Code.

We wish to make the following points in relation to the application.

Call to Decrease Sugar in the Food Supply

In Australia and New Zealand, governments, public health bodies, industry representatives and other stakeholders have been proactively working towards addressing the issue of rapidly increasing obesity rates for many years. Sugar, alongside various lifestyle choices and a poor dietary profile, has been identified as a contributor to obesity. The food and beverage industry recognises its role in reducing the amount of sugar in the Australian diet.

The ABCL and its Members recognise the contribution of our industry to the sugar intake in Australia. Our Members who have signed up to the ABCL's sugar reduction pledge, have committed to a 20 per cent reduction in sugar across the industry's portfolio by 2025.

The ABCL's Members require the flexibility and opportunity to innovate and provide consumers with a greater choice of high quality low and no sugar beverages. In addition to this, our industry must navigate a variety of public health policy initiatives.

We believe that by allowing a variety of methods for the creation of steviol glycosides (Reb D, Reb M and Reb AM), industry will be able to continue to innovate to provide a broader range of low and no sugar products.

Favourable Sensory Profile of Steviol Glycosides

In the supporting document it states:

> *"Steviol glycosides are used as intense sweeteners in reduced energy and no-added sugar products. The benefits provided are the ability to potentially more efficiently and effectively produce minor steviol glycosides, where minor steviol glycosides can have better taste attributes compared to other steviol glycosides (the results of taste tests) ..."*[1]

The ability to create products with positive sensory attributes is imperative. Many Members of the ABCL have provided consumer intelligence to suggest that taste profiles are fundamental in a consumer's decision-making process. Although many consumers wish to reduce their sugar intake, they are not willing to compromise on taste. As such, it is important that exceptional low and no sugar taste profiles be offered to the market in order to truly provide consumers with a myriad of healthier low and no sugar alternatives to sugar-sweetened products.

Cost Effective Methods of Production

Low levels of minor glycosides (such a Reb D, Reb M and Reb AM) are produced using current methods. This has an influence on the cost of these ingredients and, therefore, limits the products in which it can be contained. Alternative methods could allow for more cost-effective ingredients which could extend the range of use.

As stated in the call for submission, we note FSANZ's assessment if

> *"It is of benefit to industry to have additional choice available to them, especially where the food additive has preferential taste characteristics compared to preparations containing major individual steviol glycosides alone or is cheaper."* [1]

Further, FSANZ concludes

> *".. that the direct and indirect benefits that would arise from permitting the use of the food additive and enzyme processing aids most likely outweigh the associated costs".*[1]

[1] FSANZ Call for submission – Application A1176 Enzymatic production of steviol glycosides. 27 August 2019.

Inclusion of Production Enzymes in Schedule 18

The ABCL supports the addition of new entries into the table to subsection S18—9(3)

"to permit the use of specific enzymes as processing aids for the following technological purpose - the conversion of purified stevia leaf extract to produce one or more of the following: rebaudioside D, rebaudioside M; and rebaudioside AM. The permitted enzymes are:

- *Sucrose synthase (EC 2.4.1.13) sourced from Escherichia coli K-12 containing the gene for sucrose synthase from Arabidopsis thaliana*
- *Uridine diphosphate (UDP) glucosyltransferase sourced from Escherichia coli K-12 containing the UDP glucosyltransferase gene from Solanum lycopersicum*
- *UDP glucosyltransferase sourced from Escherichia coli K-12 containing the UDP glucosyltransferase gene from Stevia rebaudiana."*[1]

The recognition of these enzymes as processing aids provides the required clarity.

Ingredient labelling

The ABCL appreciates the proposed changes to the Code is to the specification of the steviol glycosides as a food additive, and that the existing labelling requirements would apply. Consequently, the production method used under this application does not currently have a new INS number assigned and therefore would appropriately be INS 960.

The ABCL supports FSANZ future consideration of changing the INS number for steviol glycosides to discern steviol glycosides produced by different methods e.g. from plant (960a), fermentation (960b) and enzymatic (yet to be assigned) once the work by the Codex Committee on Food Additives has been completed.

Genetically Modified Status of the Ingredient

The ABCL appreciates clarity regarding the genetically modified status of these steviol glycoside preparations produced from the enzymatic conversion method referred to in the application.

As stated in the call for submissions paper, we note FSANZ's assessment is that

> *"PureCircle's steviol glycoside preparations are not food produced using gene technology as they are not derived from an organism that has been modified using gene technology As such, PureCircle's steviol glycoside preparations that are the subject of this application do not require labelling as 'genetically modified".*[1]
>
> *The enzymes used as processing aids to manufacture PureCircle's steviol glycoside preparations are highly unlikely to be present as an ingredient in food for sale which contains these preparations. Furthermore, it is understood that the steviol glycoside preparations themselves would not be sold for retail sale or to a caterer because they*

are highly concentrated intense sweeteners. As such, it is highly likely that the requirement to label the processing aids as 'genetically modified' would not apply to a food for sale that contains the steviol glycoside preparation(s) because the labelling requirements only apply to food that consists of, or has as an ingredient, a GM food under section 1.5.2—4(1).

Use of Enzymatically Produced Steviol Glycosides in Overseas Markets

The approval of the specific enzymatic conversion method for producing steviol glycosides preparations will allow our industry in Australia to have increased access to these ingredients. This also has the potential for our industry to be more competitive commercially with markets overseas. We also note the following

a. USA:
   Generally Recognized as Safe (GRAS) notice for the steviol glycosides preparation with a high Reb M content produced by enzymatic conversion of Reb A from stevia leaf extract (GRN 745).

b. FAO/WHO experts committee on Food Additives:
   A framework was adopted [at their 87th meeting in June 2019] for developing specifications for steviol glycosides by four different methods of production, including Enzyme Modified Steviol Glycosides. This new specification is yet to be published (FAO/WHO 2019).

Summary

The ABCL thanks FSANZ for the opportunity to provide this submission in support of the inclusion of a new specification for rebaudioside D, M and AM produced by an enzymatic conversation method using specific enzymes derived from genetically modified (GM) strains of E. coli. to the Food Standards Code.

We would like to make these concluding remarks in relation to this important application:

- The non-alcoholic beverages industry is currently implementing a range of changes that will decrease its use of sugar. Consumers expect the industry to take sugar reduction measures seriously and the industry has responded to this by announcing the ABCL sugar reduction pledge. This pledge will reduce sugar by 20 per cent across the industry's portfolio by 2025.

- To meet this, other targets set in sugar reduction and customer expectations, innovation within the category is required with cost effective sugar alternatives.

- As minor glycosides, Reb D, M and AM has better sensory attributes than other steviol glycosides, which allows for more palatable products.

- The ABCL supports the draft variation to Schedule 18 - the addition of the enzymes for the conversion from the Stevia rebaudiana Bertoni (stevia) leaves.

- We appreciate the clarity provided that these glycosides and the manufacturing method is not considered genetically modified.

Contact

If you wish to discuss any aspects of this correspondence, please