codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

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Agenda Item 9 **CX/LAC 06/15/10**
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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

FAO/WHO COORDINATING COMMITTEE FOR LATIN AMERICA AND THE CARIBBEAN

15th Session
Mar del Plata, Argentina 13-17 November 2006

ISSUES OF SIGNIFICANCE TO THE REGION

DISCUSSION PAPER ON STEVIOSIDE

(prepared by Brazil)

BACKGROUND

1. At the 13th Session of CCLAC, the delegation of Paraguay expressed its interest in continuing the assessment of the stevioside and mentioned that this country had already raised its concern regarding this additive to the Joint FAO/WHO Expert Committee on Food Additives (JECFA), because of the importance for the consumer to have established the Acceptable Daily Intake for this product (ADI) (CODEX, 2002).

2. During the 35th Session of the Committee on Food Additives and Contaminants (CCFAC), the Working Group on Priorities of Food Additives for Evaluation by JECFA proposed the inclusion of the stevioside in the Priority List. In November of 2003, Paraguay presented to JECFA a report with scientific data. Japan, China, European Commission and Belgium also presented references (FAO/OMS, 2005).

3. At the 14th Session of CCLAC, the delegation of Paraguay recalled that following the inclusion of stevioside as a natural sweetener in the Priority List of Food Additives of CCFAC, JECFA had evaluated this product at its 63rd Session. A temporary ADI had been established as data were insufficient to establish a full ADI and the JECFA had decided to re-evaluate stevioside in 2007.

4. At its 14th Session the CCLAC invited countries of the Region to provide scientific data on stevioside in order to allow JECFA to complete the re-evaluation of this substance and the allocation of a full ADI, and subsequently to allow the CCFAC to consider its inclusion in the General Standard for Food Additives (GSFA). The Committee agreed to establish a working group coordinated by Brazil with the assistance of Argentina, Costa Rica and Paraguay to facilitate the collection of relevant scientific information that could be forwarded to JECFA (Alinorm 05/28/36 par. 120 e 121).

JECFA EVALUATION

5. Steviol glycosides are natural constituents of the plant Stevia rebaudiana Bertoni. The leaves of S. rebaudiana Bertoni contain at least ten different glycosides, the major constituents being stevioside and rebaudioside A (WHO, 2005).

6. The commercial products present different contents, since their compositions depend on the extraction process. Since JECFA could not establish one specification for each formulation, the toxicological studies must be for products with at least 95% of purity.

7. At its 51st meeting JECFA observed some lack of information, therefore they advised that specifications should be developed to assure that the tested material would be representative of the commercialized products. Further information on the nature of the substance tested, on the metabolism of stevioside in humans and on the activity of steviol in suitable studies of genotoxicity in vivo was required.

8. At its 63rd meeting JECFA clarified that there is no single or trivial name in common usage for the evaluated mixture of glycosylated derivatives of steviol, then it established that for each material that had been developed a specification it should be known as Steviol glycosides. The material evaluated at this meeting contained not less than 95% glycosylated derivatives of steviol, primarily stevioside, rebaudiosides A and C and dulcoside A, with minor amounts of rubusoside, steviolbioside, and rebaudiosides B, D, E and F. The JECFA reviewed additional biochemical and toxicological data on the major glycosylated derivatives of steviol and on the aglycone, steviol. It evaluated data sent by Japan, China, European Commission, Belgium and studies from Brazil, not published yet.

9. The JECFA concluded that stevioside and rebaudioside A are not genotoxic in vitro or in vivo.

10. The JECFA noted that most of the data requested at its fifty-first meeting, e.g. data on the metabolism of stevioside in humans, and on the activity of steviol in suitable studies of genotoxicity in vivo, had been made available.

11. The JECFA also noted that stevioside has shown some evidence of pharmacological effects in patients with hypertension or with type-2 diabetes at doses corresponding to about 12.5–25mg/kgbw per day (equivalent to 5–10mg/kgbw per day expressed as steviol). The evidences available at present were inadequate to assess whether these pharmacological effects would also occur at lower levels of dietary exposure, which could lead to adverse effects in some individuals (e.g. those with hypotension or diabetes). The JECFA therefore decided to allocate a temporary ADI, pending submission of further data on the pharmacological effects of steviol glycosides in humans. A temporary ADI of 0–2mg/kgbw was established for steviol glycosides, expressed as steviol, on the basis of the NOEL for stevioside of 970mg/kgbw per day (or 383mg/kgbw per day, expressed as steviol) in the 2-year study in rats and a safety factor of 200. This safety factor incorporates a factor of 100 for inter- and intra-species differences and an additional factor of 2 because of the need for further information. The JECFA noted that this temporary ADI only applies to products complying with the specifications.

12. The ADI is temporary because JECFA required additional information, to be provided by 2007, on the pharmacological effects of steviol glycosides in humans. These studies should involve repeated exposure to dietary and therapeutic doses, in normotensive and hypotensive individuals and in insulin-dependent and insulin-independent diabetics.

STRATEGIC ACTIONS PROPOSED

13. In order to establish a full ADI for steviol glycosides it must be available for evaluation by JECFA the following studies, until 2007:

1) Exposure studies of steviol glycosides in normotensive and hypotensive individuals and in insulin-dependent and insulin-independent diabetics;

2) Studies of pharmacological effects of steviol glycosides in humans;

3) Determination of the impurities and

4) Method of analysis for the determination of all component steviol glycosides and impurities.

14. After the JECFA evaluation it is necessary to propose a food category list and the maximum levels of the steviol glycosides in sweetener function in order to allow the Committee on Food Additives (CCFA) to consider its inclusion in the GSFA.

ADOPTED MEASURES

15. The Brazilian productive sector informed that to avoid duplicity of information as occurred in the last evaluation, the sponsors associated decided to join themselves and to submit all documents in a single request through Japan.

16. The research of the effects of steviol glycosides in humans is being conducted in the National University of Asuncion – Paraguay, by Dr. Luis Barriocanal team and is being supported by the producing companies. Other studies are being developed in Belgium by J.M.C. GEUNS and collaborators.

17. According to information from the Brazilian producer, studies related with technical specification are being developed by researchers linked to its company and by independent researchers from universities, that are providing the following information about the commercial product:

- Analytical data on distribution and concentration of all component steviol glycosides, including those not identified in the tentative specifications;
- Method of analysis for the determination of all component steviol glycosides, including those not identified in the tentative specifications;
- The nature and concentration of the fractions that do not contain steviol glycosides;
- The quantities of residual solvents from isolation and purification steps of the manufacturing process;
- The hydrolytic stability of the steviol glycosides in acid foods and beverages.

CONCLUSIONS AND RECOMMENDATIONS

18. According to the information collected the productive sector is preparing the data to present to JECFA.

19. Recent information confirmed that the JECFA evaluation is scheduled for 2008.

20. It is important to receive from other countries and observers of the Region information regarding stevia production in their countries and any other information that would be useful for JECFA evaluation.

21. After a full ADI be established it is important that interested countries work to include provisions for stevioside in the GSFA.

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