European Food Safety Authority

The EFSA Journal (2009) 1178, 1-8

SCIENTIFIC OPINION

Gum Periobalance™ tablets and chewing gum and oral health

Scientific substantiation of a health claim related to Gum Periobalance™ tablets and chewing gum and oral health pursuant to Article 13(5) of Regulation (EC) No 1924/2006[1]

Scientific Opinion of the Panel on Dietetic Products, Nutrition and Allergies

(Question No EFSA-Q-2009-00373)

Adopted on 2 July 2009

PANEL MEMBERS

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SUMMARY

Following an application from Sunstar Suisse, S.A. submitted pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of Italy, the Panel on Dietetic Products, Nutrition and Allergies was asked to deliver an opinion on the scientific substantiation of a health claim related to Gum Periobalance™ tablets and chewing gum and oral health.

The scope of the application was proposed to fall under a health claim based on newly developed scientific evidence and /or claim including a request for the protection of proprietary data.

The foods that are the subject of the health claim are Gum Periobalance™ lozenge and chewing gum with the active ingredient *Lactobacilllus reuteri* (*L. reuteri*) strains DSM 17938 and ATCC PTA 5289. The Panel considers that, on the basis of the information provided by the applicant, the *L. reuteri* strains DSM 17938 and ATCC PTA 5289 included in the Gum Periobalance™ lozenge and chewing gum as active ingredients are not sufficiently characterised (i.e., the information provided does not allow identification/characterisation of the species and strains used).

The claimed effect is "rebalancing the oral microflora and improving oral health". The target population is adults, both men and women. The Panel considers that decreasing the levels of mutans streptococci in the oral cavity and reducing the amount of dental plaque may be beneficial to health.

[1] For citation purposes: Scientific Opinion of the Panel on Dietetic Products, Nutrition and Allergies on a request from Sunstar Suisse, S.A. on the scientific substantiation of a health claim related to Gum Periobalance™ tablets and chewing gum and oral health pursuant to Article 13(5) of Regulation (EC) No 1924/2006. *The EFSA Journal* (2009) 1178, 1-8

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Two published human intervention studies and one unpublished *in vitro* study were presented by the applicant as being pertinent to the substantiation of the claimed effect.

A randomised, placebo-controlled intervention investigated the effects of *L. reuteri* ATCC 55730 on the amount of mutans streptococci in the oral cavity. The Panel notes that the strain of *L. reuteri* used in this study (*L. reuteri* ATCC 55730) is not the same which is contained in Gum Periobalance™ products *(L. reuteri* strains DSM 17938 and ATCC PTA 5289), and no data have been provided by the applicant to substantiate a functional equivalence of these two strains and the strain tested in relation to the claimed effect.

A randomised, double-blind, placebo controlled study included 59 patients with moderate to severe gingivitis who were allocated to three experimental parallel arms receiving daily during two weeks; i) LR-1 formulation containing 10^8 CFU of a *L. reuteri* strain, ii) LR-2 formulation containing 10^8 CFU of another *L. reuteri* strain, or iii) placebo. The Panel notes that it is not possible to establish whether the strains used in the study correspond to the strains included in the food for which the claim is made (Gum Periobalance™ products). Further, *L. reuteri* strains were not administered in any of the forms for which the claim was proposed (i.e., either tablets or chewing gum).

One unpublished study reports on the capacity of two *L. reuteri* strains (ATCC PTA 5289 and ATCC 55730) to inhibit the growth of periodontitis-associated bacteria. The Panel notes that only one of the strains in Gum Periobalance™ was tested (ATCC PTA 5289) besides the *L. reuteri* wild strain ATCC 55730, and that the results do not predict the *in vivo* effects of the *L. reuteri strains* contained in Gum Periobalance™ products with regard to the claimed effect.

The Panel concludes that a cause and effect relationship has not been established between consumption of Gum Periobalance™ tablets and chewing gum and “rebalancing the oral microflora or improving oral health” in the general population.

Key words: Gum Periobalance™ tablets and chewing gum, *Lactobacilllus reuteri* strains DSM 17938 and ATCC PTA5289, gingivitis, dental plaque, streptococci mutans, oral health

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BACKGROUND

Regulation (EC) No 1924/2006[2] harmonises the provisions that relate to nutrition and health claims and establishes rules governing the Community authorisation of health claims made on foods. As a rule, health claims are prohibited unless they comply with the general and specific requirements of that Regulation and are authorised in accordance with this Regulation and included in the lists of authorised claims provided for in Articles 13 and 14 thereof. In particular, Article 13(5) of that Regulation lays down provisions for addition of claims (other than those referring to the reduction of disease risk and to children's development and health), which are based on newly developed scientific evidence or include a request for the protection of proprietary data, to the Community list of permitted claims referred to in Article 13(3).

According to Article 18 of that Regulation, an application for inclusion in the Community list of permitted claims referred to in Art 13(3) shall be submitted by the applicant to the national competent authority of a Member State, who will make the application and any supplementary information supplied by the applicant available to European Food Safety Authority (EFSA).

Steps taken by EFSA:

- The application was received on 11/02/2009.
- The scope of the application was proposed to fall under a health claim based on newly developed scientific evidence and /or claim including a request for the protection of proprietary.
- The scientific evaluation procedure started on 11/02/2009.
- On 16/03/2009, the NDA Panel agreed on the List of Questions, which requests the applicant to supplement additional particulars to accompany the application by 01/04/2009.
- The applicant submitted the responses to the NDA Panel List of Questions on 01/04/2009.
- During the meeting on 02/07/2009, the NDA Panel after having evaluated the overall data submitted, adopted an opinion on the scientific substantiation of a health claim related to Gum Periobalance™ tablets and chewing gum and oral health.

TERMS OF REFERENCE

EFSA is requested to evaluate the scientific data submitted by the applicant in accordance with Article 16(3) of Regulation (EC) No 1924/2006. On the basis of that evaluation, EFSA will issue an opinion on the scientific substantiation of a health claim related to: Gum Periobalance™ tablets and chewing gum and oral health.

EFSA DISCLAIMER

The present opinion does not constitute, and cannot be construed as, an authorisation to the marketing of Gum Periobalance™ tablets and chewing gum, a positive assessment of its safety, nor a decision on whether Gum Periobalance™ tablets and chewing gum are, or are not, classified as foodstuffs. It should be noted that such an assessment is not foreseen in the framework of Regulation (EC) No 1924/2006.

[2] European Parliament and Council (2006). Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods. Official Journal of the European Union OJ L 404, 30.12.2006. Corrigendum OJ L 12, 18.1.2007, p. 3–18.

It should also be highlighted that the scope, the proposed wording of the claim and the conditions of use as proposed by the applicant may be subject to changes, pending the outcome of the authorisation procedure foreseen in Article 18(4) of Regulation (EC) No 1924/2006.

ACKNOWLEDGEMENTS

The European Food Safety Authority wishes to thank Miguel Gueimonde, Ingegerd Johansson, and the members of the Working Group for the preparation of this opinion: Jean-Louis Bresson, Albert Flynn, Marina Heinonen, Hannu Korhonen, Ambroise Martin, Hildegard Przyrembel, Seppo Salminen, Sean (J.J.) Strain, Inge Tetens, Henk van den Berg, Hendrik van Loveren and Hans Verhagen.

1. Information provided by the applicant

Applicant's name and address: Sunstar Suisse, S.A, Sede Secondaria-Corso Italia, 13, 21047-Saronno (Varese), Italy.

The application includes a request for the protection of proprietary data in accordance with Article 21 of Regulation (EC) No 1924/2006.

1.1. Food/constituent as stated by the applicant

Gum Periobalance™ tablets and chewing gum. Food supplement for oral health containing *Latobacillus reuteri* DSM 17938 and ATCC PTA 5289.

1.2. Health relationship as claimed by the applicant

The applicant states that Gum Periobalance™ tablets and chewing gum have a formulation based on the probiotic *Latobacillus reuteri*, which may play a role in the eco-physiology of oral microbiota. The applicant also states that *L. reuteri*, taken also through non-dairy vehicles like tablets and chewing gum, helps maintaining the buccal cavity in good health, in combination with a correct oral hygiene, as well as supporting the correct oral microflora balance, and that reuterin-producing strains of *Latobacillus reuteri* have inhibitory effects against cariogenic bacteria like *Streptococcus mutans.* The applicant states that *L. reuteri* has resulted effective in the reduction of the dental plaque and gingivitis in patients with moderate to serious gingivitis.

1.3. Wording of the health claim as proposed by the applicant

Gum Periobalance™, combined with a correct oral hygiene, helps re-balancing the oral microflora and improving oral health.

1.4 Specific conditions of use as proposed by the applicant

1 tablet or 1 chewing gum a day, preferably after the normal oral hygiene with brush and floss. Gum Periobalance™ can be used both women and men.

2. Assessment

2.1. Characterisation of the food/constituent

The foods that are the subject of the health claim are Gum Periobalance™ lozenge and chewing gum with the active ingredient *Lactobacilllus reuteri* (*L. reuteri*) strains DSM 17938 and ATCC PTA 5289.

The amount of bacteria may vary from batch to batch, but a minimum level of $5x10^8$ CFU of each strain/piece is guaranteed ($1x10^8$ CFU of each strain/piece at the end of the 18-month shelf-life). The strains used are human isolates. *L. reuteri* strain ATCC PTA-5289 is available at the American Type Culture Collection (ATCC, Rockville, MD), and *L. reuteri* strain DSM 17938 is derived by deletion of two antibiotic resistance plasmids from strain ATCC 55730 (Rosander et al., 2008). According to the information provided by the applicant, the bacterial strains in Gum Periobalance™ lozenge and chewing gum have been identified by polymerase chain reaction (PCR) using two sets of specific primers. The PCR protocol is provided in a non-published report. The Panel notes that one of the primer pairs tested (primer pair b) produces a specific amplification product for *L. reuteri* DSM 17938 with negative amplification for the other *L. reuteri* strains tested and for the negative control (*L. acidophilus*). However, the primer pair used for identification of *L. reuteri* ATCC PTA 5289 (primer pair a) produces an amplification product of similar size for *L. reuteri* ATCC PTA 5289 as well as for other *L. reuteri* strains included in the study (*L. reuteri* ATCC PTA 6475, ATCC PTA 4659

and ATCC PTA 5289) which does not allow to distinguish the strain *L. reuteri* ATCC PTA 5289 from other *L. reuteri* strains and therefore this method is not specific for the strain *L. reuteri* ATCC PTA 5289. The PCR banding pattern is not appropriate as a *stand alone* method for species identification. The information regarding identification/characterisation at strain level is lacking in the material provided.

The bulk components and sweetening/flavouring agents of the lozenge and chewing gum are well described and follow the traditional composition of gums and lozenges. The ingredients can be measured by established methods. The sweetening agents are isomalt, sorbitol and sucralose. Stability is confirmed for 6 months, and quality controls for bacteria and contaminants of the bulk are reported to be regularly performed by the producers.

The Panel considers that, on the basis of the information provided by the applicant, the *L. reuteri* strains DSM 17938 and ATCC PTA 5289 included in the Gum Periobalance™ lozenge and chewing gum as active ingredients are not sufficiently characterised (i.e., the information provided does not allow identification/characterisation of the species and strains used).

2.2. Relevance of the claimed effect to human health

The claimed effect is "rebalancing the oral microflora and improving oral health". The target population is adults, both men and women.

Rebalancing the oral microflora is a term which cannot be used for a scientific evaluation since the "normal" balance is not defined. Oral health is also a wide term, and as such does not allow a scientific evaluation. However, the applicant identifies the gingival index (GI), the plaque index and the amount of mutans streptococci in the oral cavity as markers of oral health. The amount of mutans streptococci in the oral cavity and the amount of dental plaque in certain locations of the teeth may play a role in the development of gingivitis and dental caries. Gingivitis is present in the majority (>50%) of the population (Albandar and Rams, 2002).

The Panel considers that improving oral health by reducing the number of *streptoccoci mutans* and by reducing the gingival and plaque indices may be beneficial to human health.

2.3. Scientific substantiation of the claimed effect

The applicant states to have performed a literature search in PubMed to identify studies using *L. reuteri* strains corresponding to the composition of Gum Periobalance™ products and conducted in the target population for the claim. However, the search strategy is not specified and the basis for the selection of pertinent studies is unclear.

Two published human intervention studies (Caglar et al. 2006; Krasse et al., 2006) and one unpublished *in vitro* study have been presented by the applicant as being pertinent to the substantiation of the claimed effect (Asikainen, 2006).

The randomised, placebo-controlled intervention by Caglar et al. (2006) investigated the effects of *L. reuteri* ATCC 55730 on the amount of mutans streptococci in the oral cavity. The Panel notes that the strain of *L. reuteri* used in this study (*L. reuteri* ATCC 55730) is not the same as the strains contained in Gum Periobalance™ products *(L. reuteri* DSM 17938 and ATCC PTA 5289). *L. reuteri* ATCC 55730 is the parental (wild) strain for the *L. reuteri* DSM 17938 strain actually included in Gum Periobalance™ products. Although the applicant states that these two strains are substantially equivalent (Rosander et al., 2008), no data have been provided by the applicant to substantiate a functional equivalence of these two strains in relation to the claimed effect.

The randomised, double-blind, placebo controlled study by Krasse et al. (2006) included 59 patients with moderate to severe gingivitis who were allocated to three experimental parallel

arms receiving daily during two weeks; i) LR-1 formulation containing 10^8 CFU of a *L. reuteri* strain, ii) LR-2 formulation containing 10^8 CFU of another *L. reuteri* strain, or iii) placebo. All three groups were instructed in oral hygiene. Outcome measures were the gingival index (GI) and the plaque index, both outcomes that relate to gingivitis. The Panel notes that the specific strains of *L. reuteri* used in this study have not been identified in the publication, and that, therefore it is not possible to establish whether they correspond to the strains included in the food for which the claim is proposed (Gum Periobalance™ products). Further, *L. reuteri* strains were not administered in any of the forms proposed in the claim (i.e., either tablets or chewing gum).

One unpublished study reports on the capacity of two *L. reuteri* strains (PTA 5289 and ATCC 55730) in inhibiting the growth of periodontitis-associated bacteria *in vitro* when glycerol is added to the growth medium (Asikainen, 2006). The Panel notes that only one of the strains in Gum Periobalance™ was tested (PTA 5289) besides the *L. reuteri* wild strain ATCC 55730, and that the results do not predict the effects of the *L. reuteri strains* contained in Gum Periobalance™ products *in vivo* with regard to the claimed effect.

The Panel concludes that a cause and effect relationship has not been established between consumption of Gum Periobalance™ tablets and/or Gum Periobalance™ chewing gum and the improvement of oral health by reducing the number of *streptoccoci mutans* or by improving the gingival or plaque indices.

DOCUMENTATION PROVIDED TO EFSA

Health claim application on Gum Periobalance™ tablets and chewing gum and oral health pursuant to Article 13(5) of Regulation (EC) No 1924/2006 (Claim serial No: 0240-IT). February 2009. Submitted by Sunstar Suisse, S.A.

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GLOSSARY / ABBREVIATIONS

ATCC	American Type Culture Collection
CFU	Colony-forming units
DSM	Deutsche Sammlung von Mikroorganismen (German Culture Collection of Microorganisms)
L. reuteri	Lactobacillus reuteri
PCR	Polymerase chain reaction