U.S. FOOD & DRUG ADMINISTRATION

Human Foods Program

Amy Mozingo
VP US Nutra Regulatory Sciences
GRAS Associates, LLC
11810 Grand Park Avenue
Suite 500
North Bethesda, MD 20852

Re: GRAS Notice No. GRN 001288

Dear Ms. Mozingo:

The Food and Drug Administration (FDA, we) completed our evaluation of GRN 001288. We received the notice that you submitted on behalf of CJ CheilJedang Corporation (CJ) on July 7, 2025, and filed it on November 17, 2025. CJ submitted an amendment to the notice on January 20, 2026, that provided additional information about the identity of the production strain, fermentation process, and an updated literature search.

The subject of the notice is enzyme-modified steviol glycosides (EMSG) for use as a general-purpose sweetener in foods excluding infant formula and products under the U.S. Department of Agriculture's jurisdiction, at levels determined by current good manufacturing practice. The notice informs us of CJ's view that these uses of EMSG are GRAS through scientific procedures.

The EMSG that is the subject of GRN 001288 is made from highly purified components of the leaves of the stevia plant. We note that a GRAS notice for the use of specific purified components of stevia, such as EMSG, and FDA's response do not necessarily apply to the uses of other stevia products.

Our use of the terms "EMSG", "steviol glycosides," or "SGs" in this letter is not our recommendation of these terms as appropriate common or usual names for declaring the substance in accordance with FDA's labeling requirements. Under 21 CFR 101.4, each ingredient must be declared by its common or usual name. In addition, 21 CFR 102.5 outlines general principles to use when establishing common or usual names for nonstandardized foods. Issues associated with labeling and the common or usual name of a food ingredient are under the purview of the Office of Nutrition and Food Labeling (ONFL) in the Nutrition Center of Excellence. The Office of Pre-Market Additive Safety did not consult with ONFL regarding the appropriate common or usual names for "EMSG, "steviol glycosides," and "SGs."

CJ provides information about the identity and composition of EMSG. CJ describes EMSG as a white to light yellow powder that contains ≥ 95% total steviol glycosides (SGs). SGs are a group of structurally related sweet compounds that are constituents of *Stevia rebaudiana* (Bertoni) Bertoni leaves and consist of a common steviol backbone linked to varying numbers and combinations of glucose, rhamnose, xylose, fructose, deoxyglucose, galactose, and arabinose. CJ states that EMSG contains a mixture of enzymatically glucosylated SGs with ≤ 15% unreacted SGs and notes that the additional glucose residues are linked by α-1,6-glycosidic bonds, whereas the glucose in naturally occurring SGs are β-glycosidic bonds.

CJ describes the production organism used in the manufacture of EMSG. The process uses a non-pathogenic and non-toxicogenic strain of *Liquorilactobacillus mali* KCCM13503P that expresses α-1,6-glycosyltransferase. CJ states that the production organism is derived from *L. mali* type strain DSM 20444 and is deposited in the Korean Culture Center of Microorganisms as KCCM13503P.

The production organism is grown under sterile aerobic conditions. After fermentation is complete, the culture broth containing the production organism is used in the production of EMSG. CJ states that the starting material is an extract of the leaves of *S. rebaudiana* (stevia extract). CJ provides specifications for six stevia extract options and notes that all the extracts contain ≥95% total SGs with varying levels of rebaudioside A in the range of 40 to 97%.

CJ states that the stevia extract, sucrose or raw sugar, and the production organism culture broth are mixed and incubated. After the reaction is complete, the enzyme and production organism are inactivated by heat treatment and removed from the reaction mixture by filtration. CJ describes two alternative processes for the remaining manufacturing steps. In the first option, the reaction filtrate is subjected to an adsorbent resin and the SGs eluted with ethanol. The eluate is then subjected to an ion exchange resin and ethanol is then removed by evaporation. The resulting concentrate is filtered using ultrafiltration and nanofiltration. The filtrate is then concentrated by evaporation, sterilized using microfiltration, and spray dried to obtain the EMSG product. In the second option, the filtrate is subjected to an ion exchange resin and the eluate filtered using ultrafiltration followed by nanofiltration. Ethanol is then removed and the filtrate concentrated by evaporation. The concentrate is sterilized using microfiltration and then spray dried to obtain the EMSG product. CJ states that EMSG is produced under current good manufacturing practices and that all materials, processing aids, and food contact substances used to manufacture EMSG are food-grade, permitted by U.S. regulations or have been previously determined to be GRAS for the respective use.

CJ provides specifications for EMSG that includes the content of total SGs (≥ 95%) and limits for moisture (≤ 6%), ash (≤ 1%), ethanol (≤ 5000 mg/kg), methanol (≤ 200 mg/kg), lead (≤ 0.1 mg/kg), arsenic (≤ 0.1 mg/kg), cadmium (≤ 0.1 mg/kg), mercury (≤ 0.1 mg/kg), and microorganisms. CJ provides a summary of the results of analyses of

five non-consecutive batches to demonstrate that EMSG can be produced to meet these specifications. CJ provides the results of stability studies conducted with EMSG and concludes that the shelf life is 2 years.

CJ provides an estimate of dietary exposure to EMSG. CJ discusses a published study on dietary exposures to rebaudioside A (Ref. 1). Based on the methodology described in Ref. 1 and a relative sweetness intensity of 150 times that of sucrose, CJ estimates maximum dietary exposure in adults (expressed as steviol equivalents) to be 2.10 mg/kg body weight (bw)/day (d) and in children to be 2.32 mg/kg bw/d. CJ states that the use of EMSG in food is self-limiting due to organoleptic factors and consumer taste considerations.

CJ summarizes published studies pertaining to the metabolic fate and safety of SGs and provides the results of *in vitro* studies, including a published study[1] conducted with the subject of this GRN, that demonstrate EMSG is expected to be hydrolyzed to steviol by microbes in the colon. CJ discusses previously reviewed published acute, subchronic, and chronic toxicity/carcinogenicity studies, published multi-generational reproductive and developmental toxicology studies conducted with SGs, and *in vitro* and *in vivo* mutagenicity/genotoxicity studies for the safety conclusion of EMSG. CJ includes an update of the literature regarding the safety of SGs through January 2026, and reports that no new data were identified that would alter its safety conclusion.

To further support its view that EMSG is GRAS for the intended use, CJ summarizes the decisions on the safety of SGs by the JECFA, the European Food Safety Authority, Food Standards Australia New Zealand, and Health Canada for use in food as sweeteners. CJ notes that JECFA has established an ADI for SGs of 0-4 mg/kg bw/day (expressed as steviol equivalents). This ADI was based on a no observed adverse effect level of 970 mg/kg bw/d (383 mg/kg bw/d, as steviol equivalents) from a two-year rat study, and the application of a safety factor of 100 to account for intra- and interspecies differences.

Based on all the available scientific information, CJ concludes that EMSG is GRAS for its intended use in foods.

Standards of Identity

In the notice, CJ states its intention to use EMSG in several food categories, including foods for which standards of identity exist, located in Title 21 of the CFR. We note that an ingredient that is lawfully added to food products may be used in a standardized food only if it is permitted by the applicable standard of identity.

Section 301(ll) of the Federal Food, Drug, and Cosmetic Act (FD&C Act)

[1] CJ confirmed that the study by Park et al., 2025 was the published study in the January 20, 2026 amendment

Section 301(ll) of the FD&C Act prohibits the introduction or delivery for introduction into interstate commerce of any food that contains a drug approved under section 505 of the FD&C Act, a biological product licensed under section 351 of the Public Health Service Act, or a drug or a biological product for which substantial clinical investigations have been instituted and their existence made public, unless one of the exemptions in section 301(ll)(1)-(4) applies. In our evaluation of CJ's notice concluding that EMSG is GRAS under its intended conditions of use, we did not consider whether section 301(ll) or any of its exemptions apply to foods containing EMSG. Accordingly, our response should not be construed to be a statement that foods containing EMSG, if introduced or delivered for introduction into interstate commerce, would not violate section 301(ll).

Conclusions

Based on the information that CJ provided, as well as other information available to FDA, we have no questions at this time regarding CJ's conclusion that EMSG is GRAS under its intended conditions of use. This letter is not an affirmation that EMSG is GRAS under 21 CFR 170.35. Unless noted above, our review did not address other provisions of the FD&C Act. Food ingredient manufacturers and food producers are responsible for ensuring that marketed products are safe and compliant with all applicable legal and regulatory requirements.

In accordance with 21 CFR 170.275(b)(2), the text of this letter responding to GRN 001288 is accessible to the public at www.fda.gov/grasnoticeinventory.

Sincerely,

Susan J. Carlson -S

Digitally signed by Susan J. Carlson -S
Date: 2026.02.17 17:33:49 -05'00'

Susan J. Carlson, Ph.D.
Director
Division of Food Ingredients
Office of Pre-Market Additive Safety
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Reference

1. Renwick, A.G. 2008. The use of a sweetener substitution method to predict dietary exposures for the intense sweetener rebaudioside A. Food and Chemical Toxicology 46:S61–S69. https://doi.org/10.101