U.S. FOOD & DRUG ADMINISTRATION
Human Foods Program

William J. Rowe
GRAS Associates, LLC
11810 Grand Park Ave
Suite 500
North Bethesda, MD 20852

Re: GRAS Notice No. GRN 001174

Dear Mr. Rowe:

The Food and Drug Administration (FDA, we) completed our evaluation of GRN 001174. We received the notice that you submitted on behalf of The LittleOak Company (LittleOak) on November 28, 2023, and filed it on April 25, 2024. LittleOak submitted amendments to the notice on July 26, 2024, and October 30, 2024, that revised the specifications and clarified the composition, intended use, manufacturing process, and elements of the safety narrative.

The subject of the notice is dry whole goat milk (DWGM) for use as an ingredient in goat milk-based, non-exempt infant formula for term infants at a maximum level of 43.2% (w/w) powdered infant formula. The notice informs us of LittleOak's view that this use of DWGM is GRAS through scientific procedures.

Our use of the term, "DWGM," in this letter is not our recommendation of that term as an appropriate common or usual name 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 (OPMAS) did not consult with ONFL regarding the appropriate common or usual name for "DWGM."

LittleOak describes DWGM as a dry powder obtained from fresh goat milk. LittleOak discusses the similarities of DWGM to dry whole cow milk, which is defined in 21 CFR 131.147, and notes that goat milk contains higher concentrations of vitamin A and potassium and lower concentrations of folic acid and vitamin $B_{12}$ compared to whole cow milk. LittleOak states that whole goat milk contains a similar fatty acid profile to whole cow milk, although whole goat milk contains slightly higher levels of medium chain triglycerides, monounsaturated fatty acids, and polyunsaturated fatty acids. LittleOak reports published data and the results from the analyses of four non-consecutive batches to describe the composition of whole goat milk and DWGM, including the lipid and fatty acid profile, amino acid profile, and content of various vitamins and minerals.

LittleOak describes the manufacture of DWGM, and states it is produced following current good manufacturing practices and that all raw materials, processing aids, and food contact substances used to manufacture DWGM are food grade and are used in accordance with U.S. regulations or are GRAS for their respective uses. The manufacture of DWGM involves the removal of excess cream from the raw goat milk, and the goat milk is then evaporated, pasteurized, concentrated, homogenized, spray dried, mixed, sifted, and packaged under nitrogen. LittleOak states the pasteurization step involves either heating to >71.6 °C for 30 seconds followed by cooling or the raw goat milk is pasteurized through use of an evaporator-pasteurizer. LittleOak states that DWGM and the goat milk starting material is produced in accordance with all applicable standards and requirements, meets the requirements of 21 CFR Part 556 for veterinary drug residues, and is produced in accordance with the 2019 Pasteurized Milk Ordinance.

LittleOak provides specifications for DWGM that include the content of protein (typically 26.5%, as is, and ≥ 34% of solids, not fat), fat (26-41%), and limits for carbohydrates (≤ 43%), moisture (≤ 5%), ash (≤ 8.2%), titratable acidity (≤ 14.0 °T), scorched particles (≤ Disc B), as well as limits or reportable levels for vitamins A and D and several minerals present in whole goat milk. LittleOak also provides limits for nitrate (< 50 mg/kg), nitrite (<2 mg/kg), arsenic (< 0.05 mg/kg), cadmium (< 0.002 mg/kg), lead (< 0.01 mg/kg), mercury (< 0.01 mg/kg), and microorganisms, including *Salmonella* serovars (absent in 1500 g), *Bacillus cereus* (< 100 colony forming units/g), *Listeria monocytogenes* (absent in 125 g), and *Cronobacter* sp. (absent in 300 g). LittleOak provides the results from the analyses of four non-consecutive batches to demonstrate that DWGM can be manufactured to meet these specifications.

LittleOak provides estimates of dietary exposure to DWGM based on the intended use and infant formula consumption data from the 2017-2018 National Health and Nutrition Examination Survey (NHANES). LittleOak reports the mean and 90$^{th}$ percentile estimates of infant formula consumption for male and female infants and age ranges of 0 to 6 and 7 to 12 months and estimates dietary exposure to DWGM based on the maximum intended use level of 43.2 g DWGM per 100 g formula powder and a recommended rate of reconstitution of approximately 13.6 g per 100 mL of formula as consumed. LittleOak notes that the dietary exposure on a body weight basis is higher in the 0 to 6 month age group and estimates the mean and 90$^{th}$ percentile eaters-only dietary exposures to DWGM for this group to be 57.4 g/person (p)/d (7.86 g/kg body weight (bw)/d and 88.4 g/p/d (12.1 g/kg bw/d), respectively.

LittleOak conducted a literature search through October 2023 and discusses publicly available data and information supporting the safety of DWGM for its intended use. LittleOak states that DWGM contains macronutrients (i.e., protein, fat, and carbohydrates), vitamins and minerals that are constituents of whole goat milk. LittleOak states the intended use of DWGM will contribute some of the required nutrients in infant formula but will be appropriately supplemented such that the final infant formula would comply with 21 CFR 107.100. LittleOak discusses *in vivo* and *in vitro* studies evaluating the digestibility of goat milk-based infant formula and concludes the digestibility of protein from DWGM in infant formula is comparable to

cow milk-based infant formula and human milk. Seven clinical studies in which goat milk-based formula was used as the dietary intervention in infant populations are evaluated. LittleOak concludes that these clinical trials support the safety and tolerance of goat milk-based infant formula. Further, LittleOak discusses similarities in the article of commerce compared to the dietary intervention used in the pivotal clinical study to support the safety of DWGM. LittleOak reviews animal and human studies pertaining to the allergenicity of goat milk and states that goat milk has a similar allergic burden to cow milk in infants and young children. [1]

Based on the totality of the data and information, LittleOak concludes that DWGM is GRAS for its intended use.

**Potential Labeling Issues**

Under section 403(a) of the Federal Food, Drug, and Cosmetic Act (FD&C Act), a food is misbranded if its labeling is false or misleading in any way. Section 403(r) of the FD&C Act lays out the statutory framework for labeling claims characterizing a nutrient level in a food or the relationship of a nutrient to a disease or health-related condition (also referred to as nutrient content claims and health claims). If products containing DWGM bear any nutrient content or health claims on the label or in labeling, such claims are subject to the applicable requirements and are under the purview of the ONFL in the Nutrition Center of Excellence. OPMAS did not consult with ONFL on this issue or evaluate any information in terms of labeling claims. Questions related to food labeling should be directed to ONFL.

**Intended Use in Infant Formulas**

Under section 412 of the FD&C Act, a manufacturer of a new infant formula must make a submission to FDA providing required assurances about the formula at least 90 days before the formula is marketed. Our response to LittleOak's GRAS notice does not alleviate the responsibility of any infant formula manufacturer that intends to market an infant formula containing DWGM to make the submission required by section 412. Infant formulas are the purview of the Office of Critical Foods in the Nutrition Center of Excellence.

**Section 301(ll) of the FD&C Act**

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 LittleOak's notice concluding that DWGM is GRAS under its intended conditions of use, we did not consider whether

[1] LittleOak states that they do not intend to use DWGM in infant formula intended for consumption by infants with cow milk protein allergy.

section 301(ll) or any of its exemptions apply to foods containing DWGM. Accordingly, our response should not be construed to be a statement that foods containing DWGM, if introduced or delivered for introduction into interstate commerce, would not violate section 301(ll).

**Conclusions**

Based on the information that LittleOak provided, as well as other information available to FDA, we have no questions at this time regarding LittleOak's conclusion that DWGM is GRAS under its intended conditions of use. This letter is not an affirmation that DWGM 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 001174 is accessible to the public at www.fda.gov/grasnoticeinventory.

Sincerely,

Mical E. Honigfort -S

Digitally signed by Mical E. Honigfort -S
Date: 2024.12.06 09:13:26 -05'00'

for Susan J. Carlson, Ph.D.
Director
Division of Food Ingredients
Office of Pre-Market Additive Safety
Office of Food Chemical Safety, Dietary Supplements, and Innovation
Human Foods Program