Melvin S. Drozen
Evangelia C. Pelonis
1001 G Street, NW
Suite 500W
Washington, DC 20001

Re: GRAS Notice No. GRN 000705

Dear Mr. Drozen and Ms. Pelonis:

The Food and Drug Administration (FDA, we) completed our evaluation of GRN 000705. We received the notice that you submitted on behalf of Ingredion Incorporated (Ingredion) on May 12, 2017, and filed it on June 5, 2017. We received an amendment to the notice on August 1, 2017, that contains clarification on sources of raw food starch, limits on sulfur dioxide, and identification of unpublished data and information referenced in the notice.

The subject of the notice is distarch phosphate for use as an ingredient, thickener or texturizing agent in bread, pancakes/waffles, nutrition bars, ready-to-eat cereals, muffins, tortillas, pretzels, dry uncooked plain pasta, and meal replacements at levels ranging from 3.5 to 7.0 g per serving. The notice informs us of Ingredion's view that these uses of distarch phosphate are GRAS through scientific procedures.

Ingredion provides information about the identity and composition of distarch phosphate. Ingredion describes distarch phosphate as a flavorless modified food starch that is resistant to digestion. The structure is modified using phosphorus oxychloride to yield a starch that contains esterified phosphate crosslinking of amylopectin and amylose residues. Distarch phosphate is designated by the CAS Registry Number 55963-33-2.

Ingredion provides a description of the method of manufacture for distarch phosphate, produced using raw food starch from potato, corn, tapioca, wheat or any other food grade starch source.[1] Raw food starch is blended with water to form a slurry to which sodium chloride or sodium sulfate is added, followed by alkaline pH adjustment using sodium hydroxide. The mixture is then treated with up to 4.5% phosphorus oxychloride while maintaining alkaline pH. After the phosphorylation step is complete, the mixture is acidified with food grade acid. The starch is then washed, filtered and dried prior to packaging. Ingredion states that the method of manufacture is consistent with current good manufacturing practices.

[1] Ingredion states that if distarch phosphate is produced from raw starch other than potato starch, sulfiting agents may be used in the manufacturing process.

Ingredion provides food grade specifications for distarch phosphate including content of total dietary fiber (≥85%),[2] limits on moisture (≤16%), ash (≤2%), phosphorus (≤0.5%) and microbial contaminants. Ingredion provides results of six non-consecutive batch analyses of distarch phosphate to demonstrate that it meets these specifications. Ingredion also states that distarch phosphate conforms to specifications set forth in the Food Chemicals Codex monograph for Food Starch, Modified. Ingredion states that if distarch phosphate is produced from raw starch other than potato starch, a limit on sulfiting agents (<10 ppm) would be used to meet labeling exemption under 21 CFR 101.100(a)(4).

Ingredion provides dietary exposure estimates for distarch phosphate from the intended uses using food consumption data from the 2009–2012 National Health and Nutrition Examination Survey (NHANES). The dietary exposure to distarch phosphate for the total U.S. population (users only) is estimated to be 9–18 g/person (p)/d (0.15–0.3 g/kg body weight (bw)/d for a 60 kg individual) at the mean and 18–36 g/p/d (0.3–0.6 g/kg bw/d for a 60 kg individual) at the 90th percentile.

Ingredion discusses published and unpublished toxicity studies supporting the safety of distarch phosphate and other structurally similar modified starches. The published toxicity studies include acute, 90-day subchronic, two-year chronic, and three-generation reproductive studies. The results of the acute toxicity studies in several species support a low oral toxicity of distarch phosphate. The 90-day subchronic oral toxicity studies in rats and dogs reported no toxicologically significant effects up to the highest doses tested, 36 g/kg bw/d and 1.25 g/kg bw/d of distarch phosphate, respectively. The results of the two-year oral rat study showed that no significant toxicological effects were observed up to 15 g/kg bw/d, the highest dose of phosphated distarch phosphate tested. No toxicological effects were observed in the three-generation reproductive toxicity study, in which rats consumed diets containing 5 g/kg bw/d of phosphated distarch phosphate. Ingredion also discusses several published human studies conducted with resistant starches, including a double-blind, crossover study conducted specifically with the distarch phosphate product that is the subject of the notice. In this study, human subjects consumed distarch phosphate to provide approximately 30 g/d of phosphorylated carbohydrate for two weeks. Ingredion states that no adverse effects were reported in this study.

Ingredion evaluates the residual level of phosphorus in distarch phosphate and estimates dietary exposure to phosphorus to be 0.14 g/p/d based on the estimated dietary exposure to distarch phosphate at 90th percentile. Ingredion states that the dietary contribution of phosphorus resulting from intended uses of distarch phosphate is not significant when compared to an upper limit for phosphorus (4 g/p/d) set by the Institute of Medicine.

[2] AOAC Official Method 991.43 Total, Soluble, and Insoluble Fibre in Foods. FDA understands that Ingredion's use of the term "dietary fiber" is for the purpose of the specifications for distarch phosphate.

Ingredion includes the report of a panel of individuals (Ingredion's GRAS panel). Based on its review, Ingredion's GRAS panel concluded that distarch phosphate is safe under the conditions of its intended use.

Based on the totality of the data and information described above, Ingredion concludes that distarch phosphate is GRAS for its intended use in food.

Standards of Identity

In the notice, Ingredion states its intention to use distarch phosphate in several food categories, including foods for which standards of identity exist, located in Title 21 of the Code of Federal Regulations. 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.

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). The notice raises a potential issue under these labeling provisions. In the notice, Ingredion states that the typical maximum use level for distarch phosphate will be at a level that will support a "high" or "good source" of fiber nutrient content claim.[3] If products containing distarch phosphate 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 Office of Nutrition and Food Labeling (ONFL) in the Center for Food Safety and Applied Nutrition. The Office of Food Additive Safety (OFAS) did not evaluate any information in terms of labeling claims. Questions related to food labeling should be directed to ONFL.

Allergen Labeling

The FD&C Act requires that the label of a food that is or contains an ingredient that contains a "major food allergen" declare the allergen's presence (section 403(w)). The FD&C Act defines a "major food allergen" as one of eight foods or food groups (i.e., milk, eggs, fish, Crustacean shellfish, tree nuts, peanuts, wheat, and soybeans) or a food ingredient that contains protein derived from one of those foods. Distarch phosphate

[3] The definition of "dietary fiber" in 21 CFR 101.9(c)(6)(i) was added by FDA's final rule revising the nutrition and supplement facts labels (81 FR 33742, May 27, 2016). This final rule, among other things, defines dietary fiber as non-digestible soluble and insoluble carbohydrates (with three or more monomeric units), and lignin that are intrinsic and intact in plants; isolated or synthetic non-digestible carbohydrates (with three or more monomeric units) determined by FDA to have physiological effects that are beneficial to human health.

derived from wheat may require labeling under the FD&C Act because it may contain protein derived from wheat. Questions about petitions or notifications for exemptions from the food allergen labeling requirements should be directed to the Division of Biotechnology and GRAS Notice Review in OFAS. Questions related to food labeling in general should be directed to ONFL.

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 Ingredion's notice concluding that distarch phosphate 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 distarch phosphate. Accordingly, our response should not be construed to be a statement that foods containing distarch phosphate, if introduced or delivered for introduction into interstate commerce, would not violate section 301(ll).

Conclusions

Based on the information that Ingredion provided, as well as other information available to FDA, we have no questions at this time regarding Ingredion's conclusion that distarch phosphate is GRAS under its intended conditions of use. This letter is not an affirmation that distarch phosphate 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 000705 is accessible to the public at www.fda.gov/grasnoticeinventory.

Sincerely,

Dennis M. Keefe -S

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