Arie Carpenter
Chr. Hansen, Inc.
9015 West Maple Street
Milwaukee, WI 53214 – 4298

Re: GRAS Notice No. GRN 000938

Dear Ms. Carpenter:

The Food and Drug Administration (FDA, we) completed our evaluation of GRN 000938. We received Chr. Hansen, Inc.'s (Chr. Hansen) notice on May 1, 2020 and filed it on October 9, 2020. Chr. Hansen submitted amendments to the notice on January 8, 2021 and March 30, 2021, that modified the intended uses and provided product specifications.

The subject of the notice is *Pichia kluyveri* DSM 33235 for use as a starter culture at an inoculation level of 0.1 g/L (approximately 10^8 colony forming units (CFU)/L) in the production of alcohol-free beer, low alcohol beer, fermented vegetable and fruit juices, and fermented tea to enhance the flavor and aroma profiles. The notice informs us of Chr. Hansen's view that these uses of *P. kluyveri* DSM 33235 are GRAS through scientific procedures.

Chr. Hansen describes *Pichia* as wild, non-pathogenic yeast that are found in diverse habitats, capable of fermenting a variety of sugars, and lacks the ability use nitrate as a source of nitrogen. Chr. Hansen states that the *P. kluyveri* DSM 33235 strain was isolated from a spontaneous fermentation of mature Chardonnay grapes; it is deposited in the strain collection of the Deutsche Sammlung von Mikroorganismen und Zellkulturen (DSMZ) in Braunschweig, Germany with the accession number 33235. Chr. Hansen discusses phenotypic and genotypic characteristics to confirm the identity of the strain. Chr. Hansen states that *P. kluyveri* DSM 33235 is non-pathogenic, does not produce any toxins, and produces no biogenic amines; Chr. Hansen noted that acquired resistance is not a concern in yeast. In the absence of resistance and virulence databases for yeasts, Chr. Hansen evaluated the annotated genome of *P. kluyveri* DSM 33235 and concludes that there are no virulence or antifungal resistance genes of concern.

Chr. Hansen describes the manufacture of *P. kluyveri* DSM 33235 by aerobic fermentation of a pure culture under controlled conditions. Upon completion, the culture containing the microorganism is cooled and frozen. Chr. Hansen states that no components of the fermentation medium are allergens or are derived from allergenic sources, and that *P. kluyveri* DSM 33235 is manufactured under current good manufacturing practices using food-grade raw materials.

Chr. Hansen provides specifications for *P. kluyveri* DSM 33235 that include total cell counts (>1.0 x 10^9 cfu/g), coliforms (<100 cfu/g), lactic acid bacteria (<1000 cfu/g), lead (<0.02 mg/kg),[1] and limits for microorganisms, including *Salmonella* serovars (absent in 25 g), *Staphylococci* (absent in 1 g), and *E. coli* (absent in 1 g).[1] Chr. Hansen provides results from the analyses of three non-consecutive lots to demonstrate that *P. kluyveri* DSM 33235 is manufactured to conform with the provided specifications.

Chr. Hansen states that beverages containing *P. kluyveri* DSM 33235 are pasteurized or the *P. kluyveri* DSM 33235 is filtered out of the beverages and only a negligible amount of non-viable microorganisms, if any, would be present in the finished products. Therefore, the dietary exposure to *P. kluyveri* is not expected to increase.

Chr. Hansen states that there is a history of safe use of the *Pichia* genus in the manufacture of fermented foods, as well as chocolate, coffee beans, and mezcal, and that it is considered a safe and well-established microorganism in the fermentation of wine.

Based on the totality of evidence, Chr. Hansen concludes that *P. kluyveri* DSM 33235 is GRAS for its intended use.

Section 301(ll) of the Federal Food, Drug, and Cosmetic Act (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 Chr. Hansen's notice concluding that *P. kluyveri* DSM 33235 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 *P. kluyveri* DSM 33235. Accordingly, our response should not be construed to be a statement that foods containing *P. kluyveri* DSM 33235, if introduced or delivered for introduction into interstate commerce, would not violate section 301(ll).

Conclusions

Based on the information that Chr. Hansen provided, as well as other information available to FDA, we have no questions at this time regarding Chr. Hansen's conclusion that *P. kluyveri* DSM 33235 is GRAS under its intended conditions of use. This letter is not an affirmation that *P. kluyveri* DSM 33235 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.

[1] Chr. Hansen states that heavy metals are unlikely to be present in food cultures and notes that they monitor for heavy metals such as lead on an annual basis by selecting products that are representative of the raw materials used in the manufacturing facilities.

In accordance with 21 CFR 170.275(b)(2), the text of this letter responding to GRN 000938 is accessible to the public at www.fda.gov/grasnoticeinventory.

Sincerely,

Susan J. Carlson -S

Digitally signed by Susan J. Carlson -S
Date: 2021.04.14 15:15:28 -04'00'

Susan Carlson, Ph.D.
Director
Division of Food Ingredients
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