

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ROQUETTE FRERES, S.A.,  
Petitioner,

v.

TATE & LYLE INGREDIENTS AMERICAS LLC,  
Patent Owner.

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Case IPR2017-01507  
Patent 8,057,840 B2

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Before LORA M. GREEN, GRACE KARAFFA OBERMANN,  
and JACQUELINE T. HARLOW, *Administrative Patent Judges*.

OBERMANN, *Administrative Patent Judge*.

DECISION

Denying Institution of *Inter Partes* Review  
*35 U.S.C. § 314; 37 C.F.R. § 42.108*

## I. INTRODUCTION

Petitioner filed a Petition for *inter partes* review of claims 1–51 of U.S. Patent No. 8,057,840 B2 (Ex. 1001, “the ’840 patent”). Paper 1 (“Pet.”). Patent Owner filed a Preliminary Response. Paper 10 (“Prelim. Resp.”). With Board preauthorization (Paper 14), Petitioner filed a Reply (Paper 15) and Patent Owner filed a Sur-Reply (Paper 18). Based on the information presented, we hold that Petitioner has not demonstrated a reasonable likelihood of prevailing at trial in showing that at least one challenged claim of the ’840 patent is unpatentable.

Accordingly, we deny the Petition.

### A. *Related Proceedings*

Petitioner submits that there are no related proceedings. Pet. 1. Petitioner states that it filed, concurrently with the instant Petition, a petition for *inter partes* review of a related patent, U.S. Patent No. 7, 608,436 B2. *Id.*; see Case IPR2017-01506 (“IPR1506”). Concurrently herewith, we issue a decision in IPR1506.

### B. *The ’840 Patent (Ex. 1001)*

The ’840 patent is entitled “Food Products Comprising a Slowly Digestible or Digestion Resistant Carbohydrate Composition.” Ex. 1001, Title. The specification discloses “a need for edible materials which have a reduced content of easily digestible carbohydrates, and which can be used in place of, or in addition to, conventional carbohydrate products in foods,” such as candy, breakfast cereal, yogurt, ice cream, and marshmallows. Ex. 1001, 1:22–25, 3:23–27, 28:59–29:2 (Example 13), 32:18–62 (Example 17), 32:64–33:17 (Example 18), 34:13–33 (Example 21), 34:38–62 (Example 22).

The specification further discloses a food product that comprises an oligosaccharide composition, which may be produced from a feed composition that includes, for example, monosaccharides, linear oligosaccharides, or a mixture of both. *Id.* at 4:38–41. Suitable starting materials for the feed composition include dextrose syrups, corn syrup, and maltodextrose solutions. *Id.* at 4: 57–62. The feed composition may be subjected to a heating step and a contacting step. *Id.* at 5:21–29, 6:24–32, 49:20–37 (claim 1). During the contacting step, the feed composition may be contacted with a catalyst, such as an enzyme or acid, for a period of time sufficient to accelerate the rate of cleavage or formation of glucosyl bonds to cause formation of non-linear oligosaccharides. *Id.* at 5:3–6:17. The product materials may be tested for digestion resistance using a technique known as the Englyst assay. *Id.* at 1:37–62 (summary of the invention), 28:23–57 (Example 12).

The food product of the claimed invention has a higher concentration of non-linear oligosaccharides than linear oligosaccharides. *Id.* at 5:3–9, 40–41, 49:20–37 (claim 1, specifying a food product comprising an “oligosaccharide composition” that “contains a higher concentration of non-linear saccharide oligomers than linear saccharide oligomers”). On that point, the specification discloses that “[g]astrointestinal enzymes readily recognize and digest carbohydrates in which the dextrose units are linked alpha (1→4) (‘linear’ linkages)” and, further, that “[r]eplacing these linkages with alternative linkages (alpha (1→3), alpha (1→6) (‘non-linear’ linkages) or beta linkages, for example) greatly reduces the ability of gastrointestinal enzymes to digest the carbohydrate.” *Id.* at 5:47–54. The specification further defines the claim terms “slowly digestible,” “digestion-resistant,”

and “primarily digestion-resistant” in a disclosure that we discuss in our analysis of the patentability challenges. *Id.* at 1:37–62. Where a distinction is not necessary to our analysis, we refer to these limitations collectively as “the digestibility limitations” of the claims.

### *C. Illustrative Claim*

Claims 1 and 44 are the only independent claims. Claim 1 is reproduced below:

1. A food product that comprises an oligosaccharide composition that is digestion resistant or slowly digestible and that is made by a process comprising:

heating an aqueous feed composition that comprises at least one monosaccharide or linear saccharide oligomer, and that has a solids concentration of at least about 70% by weight, to a temperature of at least about 40° C.; and

contacting the feed composition with at least one catalyst that accelerates the rate of cleavage or formation of glucosyl bonds for a time sufficient to cause formation of non-linear saccharide oligomers, wherein the oligosaccharide composition contains a higher concentration of non-linear saccharide oligomers than linear saccharide oligomers, and comprises non-linear saccharide oligomers having a degree of polymerization of at least three in a concentration of at least about 20% by weight on a dry solids basis.

Ex. 1001, 49:21–37.

Claim 44 specifies “[a] food product comprising a carbohydrate composition that is primarily slowly digestible or digestion resistant” and limits the concentration of non-linear and linear saccharide oligomers, but does not recite a heating or contacting process step. *Id.* at 52:7–16.

### *D. The Asserted Evidence*

The Petition asserts the following prior art references in the grounds of unpatentability:

(1) WO 98/41545 patent application to Pankaj Shah et al., published September 24, 1998 (Ex. 1004, “Shah”);

(2) S.A.S. Craig et al., *Polydextrose as Soluble Fiber and Complex Carbohydrate*, in *Complex Carbohydrates in Foods* 229–247 (Susan Sungsoo Cho et al. eds. 1999) (Ex. 1005, “Craig”);

(3) US Pat. No. 5,424,418, issued to Pierrick Duflot on June 13, 1995 (Ex. 1006, “Duflot”);

(4) US Pat. No. 3,876,794, issued to Hans H. Rennhard on April 8, 1975 (Ex. 1007, “Rennhard”);

(5) Robert P. Allingham, *Polydextrose - A New Food Ingredient: Technical Aspects*, in *Chemistry of Foods and Beverages: Recent Developments* 293–303 (George Charalambous & George Inglett eds. 1982) (Ex. 1008, “Allingham”);

(6) R. E. Smiles, *The Functional Applications Of Polydextrose*, in *Chemistry of Foods and Beverages: Recent Developments* 305–322 (George Charalambous & George Inglett eds. 1982) (Ex. 1009, “Smiles”);

(7) US Pat. No. 4,518,581, issued to Toshio Miyake et al. on May 21, 1985 (Ex. 1010, “Miyake”);

(8) US Pat. No. 4,782,045, issued to Yoshiaki Machida et al. on November 1, 1988 (Ex. 1011, “Machida”).

The Petition is supported by a declaration of Dr. Alexei Demchenko. Ex. 1002. The Reply is supported by a supplemental declaration of Dr. Demchenko. Ex. 1050. The Sur-Reply is supported by a declaration of Dr. Robert Linhardt. Ex. 2001.

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