Celery Powder Petition

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Petition Justification Statement

Organic Eye, a not-for-profit public interest organization dedicated to protecting the organic farming and food movement, including the quality and integrity of ingredients in certified organic foods, hereby submits the following petition for consideration regarding the removal of celery powder from the NOSB National List of acceptable non-organic ancillary ingredients in organic foods.

As will be seen in this petition, Organic Eye believes that the use of celery powder as a preservative in foods that are labeled as "uncured" is not only misleading, but also exposes the consumer to the potential carcinogenic effects of the high levels of nitrates and nitrites present in celery powder and is harmful to human health and the environment.

Pursuant to the document entitled *Procedure: National List Petition Guidelines* https://www.ams.usda.gov/sites/default/files/media/NOP%203011%20Petition%20Procedures.pdf the following are responses to the items listed therein:

4. B.1 Celery Powder has been listed as an ingredient on the NOSB (National Organic Standards Board) National List (§205.606 https://www.ecfr.gov/current/title-

7/subtitle-B/chapter-I/subchapter-M/part-205/subpart-G/subject-group-ECFR0ebc5d139b750cd/section-205.606) since 2007.

4. B.2 The Petitioner is Organic Eye, PO Box 8, La Farge, WI 54639.

4. B.3 The intended or current use of celery powder is as a preservative for meats that are labeled as organic and "uncured".

4. B.4 Intended activities and application rate. Again, the intended use of celery salt is as a preservative for meats and cheeses that are labeled as organic and "uncured."

4. B.5 The manufacturing process for celery powder is as follows: According to the Organic Materials Review Institute https://www.omri.org/,

> The manufacturing process for celery powder is fairly simple. Celery is harvested, cleaned, macerated and blanched. The insoluble solids are separated from the liquid and then concentrated, heated and dried. Celery powder is not typically formulated with any ancillary substances.
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> https://www.omri.org/celery-powder

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7 U.S.C. § 6517 https://www.law.cornell.edu/uscode/text/7/6517 provides guidance about what can be included on the National List:

> The National List may provide for the use of substances in an organic farming or handling operation that are otherwise prohibited under this chapter only if—
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> **(A)** the Secretary determines, in consultation with the Secretary of Health and Human Services and the Administrator of the Environmental Protection Agency, that the use of such substances—
>
> **(i)**
>
> would not be harmful to human health or the environment;

(ii)

is necessary to the production or handling of the agricultural product because of the unavailability of wholly natural substitute products; and

(iii)

is consistent with organic farming and handling

Procedural History of Celery Powder on the National List

In 2007, Jerry Brown of Florida Food Products, Inc. and Jim Bacus of Jim Bacus Consulting filed a petition https://www.ams.usda.gov/sites/default/files/media/Celery%20Powder%20Petition.pdf for the inclusion of celery powder on the National List. The NOSB approved the petition in that same year by a vote of 4-1 https://www.ams.usda.gov/sites/default/files/media/NOP%20Final%20Rec%20Celery%20Powder.pdf.

Subsequent NOSB actions on celery powder include a 9-5 vote to retain Celery Powder on the List in October of 2015 and, in 2017, a notice of renewal was published in the Federal Register https://www.federalregister.gov/documents/2017/03/21/2017-05480/national-organic-program-usda-organic-regulations.

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As this petition will illustrate, several research studies have shown that nitrates and nitrites are likely carcinogens. Furthermore, the labeling of food products as "uncured" when in fact, due to the use of celery powder as a curing agent, they may contain nitrates and nitrites in higher levels than conventionally preserved foods is not only inherently false and misleading but may also expose the organic food consumer to the various health risks that have been associated with the ingestion of these compounds. This is particularly egregious given that many consumers are choosing organic foods because they perceive them as being safer and trust that all synthetic and non-organic compounds and ingredients are thoroughly vetted by the NOSB.

This petition will also demonstrate that celery powder should be removed from the National List because, contrary to the third bulleted approval criterion of the NOSB policy listed above, it *is* present in significant levels, it *does* have a technical and functional effect on preserved foods, and it *is* harmful to human health under the provisions of 7 U.S.C. § 6517.

It also seems significant that the original petition submitted by Brown and Bacus in 2007, that the NOSB appeared to have been persuaded by when it made its initial decision to include celery powder on the National List, made no mention of the attendant cancer risks associated with celery powder. Furthermore, two of the three articles cited in support of the petition appear to have been written by the petitioner, Bacus, himself.

Other trade associations have submitted petitions in favor of the continuation of celery powder on the National List. *See*. e.g. the draft comment dated 9/6/2019 prepared by the Organic Trade Association (OTA) https://ota.com/sites/default/files/indexed_files/OTA_CeleryPowderFall2019_AMS-NOP_FinalDraft.pdf, the primary focus of which was on the need to keep the nonorganic celery powder on the National List pending the development of an organic form of the same and which did not address the potential health risks associated with the high levels of nitrates and nitrites found in celery powder. An earlier OTA document, https://ota.com/sites/default/files/indexed_files/OTA_CeleryPowderSpring2019_AMS-NOP-18-0071_Final.pdf, prepared as a response to questions received from the NOSB, similarly focused on the need to develop an organic form of celery powder and gave scant attention to the attendant health risks of celery powder in either conventional or organic form. In response to the NOSB's question re the latest information on the human health risks of nitrate and nitrites present in processed meats from either synthetic or plant-based sources, the OTA stated that "To the best of our knowledge, the source of the nitrate/nitrate (synthetic vs. plant-based) does not make a difference" and referred the NOSB to the "expert panel" for further information.

I. Nitrates, Nitrites, and Cancer

Many research studies and independent public interest organizations have found that nitrates and nitrites are likely carcinogens. *See*, e.g., the Agency for Toxic Substance and Disease Registry (ATSDR) *Case Studies in Environmental*

Medicine Nitrate/Nitrite Toxicity (2013) which raises the concerns that excessive ingestion of nitrates and nitrites increases the risks of developing methemoglobinemia, hypotension, pregnancy complications, a number of reproductive effects, and cancer, among others. In this report the ATSDR states:

> ...Some study results have raised concern about the cancer-causing potential of nitrates and nitrites used as preservatives and color-enhancing agents in meats [Norat et al. 2005; Tricker and Preussmann 1991]. Nitrates can react with amino acids to form nitrosamines, which have been reported to cause cancer in animals [Bruning-Fann and Kaneene 1993]. Elevated risk of non-Hodgkin's lymphoma [Ward et al. 1996] and cancers of the esophagus, nasopharynx, bladder, colon, prostate and thyroid have been reported [Cantor 1997; Eichholzer and Gutzwiller 1998; Barrett et al. 1998; Ward et al. 2010].
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> An increased incidence of stomach cancer was observed in one group of workers with occupational exposures to nitrate fertilizer .... The International Agency for Research on Cancer (IARC) classifies nitrates and nitrites as "probably carcinogenic to humans" (Group 2A) under certain conditions (i.e., ingested nitrate or nitrite under conditions that result in endogenous nitrosation) which could lead to the formation of known carcinogens such as N-nitroso compounds [IARC 2010].

- ATSDR Case Studies in Environmental Medicine Nitrate/Nitrite Toxicity https://www.atsdr.cdc.gov/csem/nitrate_2013/docs/nitrite.pdf at page 56.

See Also the Citizen Petition submitted by Consumer Reports to the Food Safety and Inspection Services (FSIS) https://www.fsis.usda.gov/sites/default/files/media_file/2020-07/19-03-CSPI-082919.pdf that cited numerous studies that have come to similar conclusions regarding the carcinogenic properties of nitrates and nitrites. The following is an excerpt from an International Agency for Research on Cancer (IARC) study quoted in the Citizen Petition:

> The International Agency for Research on Cancer (IARC), an agency of the World Health Organization (WHO), has evaluated the carcinogenicity of nitrate and nitrite,[19] as well as consumption of processed meat.[20] IARC classifies ingested nitrate or nitrite under conditions that result in endogenous nitrosation—the formation of N-nitroso compounds in the body—as probably carcinogenic to humans (Group 2A), and classifies

processed meat as carcinogenic to humans (Group 1). In its overall evaluation of nitrate and nitrite, IARC noted that there is an active endogenous nitrogen cycle in humans that involves nitrate and nitrite, which are interconvertible in the body.[21] Ingested nitrate is excreted in the saliva and reduced to nitrite, mainly by oral bacteria.[22] Under acidic conditions in the stomach, nitrite then reacts readily with nitrosatable compounds, especially secondary amines and alkyl amides (present in meat and other foods), to generate N-nitroso compounds. These nitrosating conditions are enhanced following ingestion of additional nitrate, nitrite, or nitrosatable compounds. Some of the N-nitroso compounds that could be formed in humans under these conditions are known carcinogens.[23]

19 IARC Monograph on Ingested Nitrate and Nitrite https://www.ncbi.nlm.nih.gov/books/NBK326544/pdf/Bookshelf_NBK326544.pdf (2010).

20 IARC Monograph on Processed Meat.

21 IARC Monograph on Ingested Nitrate and Nitrite at 325.

22 Ibid at 26.

23 Ibid at 325.

The IARC has published other monographs on the carcinogenic effects of Nitrates and Nitrites. *See*, e.g. IARC report *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans VOLUME 94 Ingested Nitrate and Nitrite, and Cyanobacterial Peptide Toxins* https://monographs.iarc.who.int/wp-content/uploads/2018/06/mono94.pdf. *See Also* the article by the American Institute for Cancer Research entitled, *Hot Dogs, Bacon, Celery Powder and Cancer Risk* *https://www.aicr.org/resources/blog/healthtalk-will-hot-dogs-and-bacon-preserved-with-celery-powder-still-increase-my-cancer-risk/#:~:text=Although%20natural%20ingredients%20like%20celery,of%20colorectal%20and%20stomach%20cancers* that states as follows:

> …Although natural ingredients like celery powder may make processed meats sound much safer than conventional options, we don't have evidence to support that. Even small amounts of processed meats eaten regularly – such as having a daily hot dog — increase the risk of colorectal and stomach cancers. Whether you choose conventional or "natural" processed meats, until research becomes clearer, the best advice from many medical authorities is to minimize them all.

Clearly, based on the foregoing discussion, celery powder's presence as an ingredient in preserved foods is *not* at an insignificant level and *does* have a technical or functional effect in that food, contrary to the NOSB's policy regarding when it is appropriate to list an item on the national list.

II. Foods preserved with celery powder may contain higher levels of nitrates and nitrites than those preserved with artificially manufactured nitrates and nitrites.

In addition to being a likely carcinogen, celery powder may contain even more nitrates and nitrites than foods preserved with synthetically manufactured versions of the same preservatives, thus increasing the attendant risks of developing the various diseases discussed in the above referenced ATSDR report and Consumer Reports Citizen petition. See, e.g., *Ingredients in Meat Products: Properties, Functionality and Applications*, pp 398-399:

> ...Celery powder prepared from celery juice has been shown to have a nitrate content of approximately 2.75%. When using juice powder added at 0.2%, 0.35%, or 0.4% (on a total formulation basis), and assuming 100% nitrate-to-nitrite conversion, ingoing nitrite concentrations of approximately 69, 120, and 139 ppm (based on meat block), respectively, could be expected. As the amount of celery juice powder in the formulation increases, higher amounts of generated nitrite can be expected. …From these results it was determined an uncured product with nitrite replaced with a source containing naturally occurring nitrate could result in a product with higher levels of residual nitrite than one in which nitrite was originally and intentionally added.

III. ***Labeling processed foods as "uncured" when in fact they contain celery powder with the same, if not more, amount of nitrates and nitrites than conventionally preserved food is inherently false and misleading.***

The above cited *Consumer Reports* petition was directed at the Food Safety and Inspection Service (FSIS), urging them to change the labeling requirements, pointing out that labeling practices as they stand now allow processed meat manufacturers to state that their products are uncured when in fact, due to the addition of celery salt, they may have more nitrates and nitrites than processed

meats that are cured with synthetic nitrites. Regulations also permit an item to be labeled as uncured, even when celery powder is used as the curing agent, as long as there is a disclaimer in fine print stating that the only nitrates and nitrites that may nonetheless be present are as they naturally appear in the celery powder.

In the words of the Consumer Reports petition,

> …Both synthetic and non-synthetic nitrates and nitrites may cause cancer, and product testing results released today by Consumer Reports show that processed meats made with celery powder and other non-synthetic sources of nitrates and nitrites can contain residues of these substances, just as do meats that use synthetic sources.[2] Consumer Reports is also releasing survey data today showing that consumers are confused by the "No Nitrate or Nitrite Added* " statements, which are currently accompanied by a fine-print disclaimer on product labels identifying the non-synthetic source of nitrates or nitrites (e.g., "* Except those naturally occurring in celery powder").
>
> We therefore urge the agency to stop requiring, and instead prohibit, the "No Nitrate or Nitrite Added" claim on processed meat, except when no nitrate or nitrite is added from any source. In its place, we ask that the agency require a front-of-package declaration and clear ingredient labeling whenever nitrates or nitrites are used in meats, regardless of the source. We also urge the agency to take additional steps to minimize levels of residual nitrates, nitrites, and nitrosamines in these products.

As of the date of this petition, it appears as though the FSIS intends to partially grant the Consumer Reports request. An article dated December 17, 2020 in *Food Safety News*, https://www.foodsafetynews.com/2020/12/cspi-cr-request-to-prohibit-nitrate-statements-put-on-track-for-approval/#:~:text=The%20two%20consumer%20groups%20by,sources%2C%20such%20as%20celery%20powder, states:

> "After careful consideration of your petition and the 17 public comments submitted to regulations.gov in response to your petition, we have decided to partially grant your request," FSIS said in its response posted Tuesday on the agency's website.

> "FSIS intends to conduct a rulemaking to propose to prohibit the statements, "No Nitrate or Nitrite Added" and "Uncured," on products that have been processed using any source of nitrates or nitrites," it continued. "FSIS also intends to approve non-synthetic sources of nitrates or nitrites as curing agents. However, rather than requiring disclosure statements about the use of nitrate or nitrites on labels of meat and poultry products, as requested in the petition, FSIS intends to propose to amend and clarify its meat and poultry labeling regulations to establish new definitions for "Cured" and "Uncured." The basis for these proposed changes would be discussed in detail in the proposed rule, which is listed in the Fall 2020 Semiannual Regulatory Agenda,1 with a tentative publication date of May 2021."

Shortly after the Consumer Reports petition was filed, several public interest organizations and individuals filed 17 comments with the FSIS which are located here: https://www.regulations.gov/docket/FSIS-2019-0022/comments. These commenters included the American Cancer Society Cancer Action Network (ACS CAN), the Public Justice Food Project (PJ Food Project), and the Animal Legal Defense Fund (ALDF). Comments filed in support of the petition can be accessed here: file:///C:/Users/User/Downloads/FSIS-2019-0022-0011_attachment_1%20(1).pdf and here: file:///C:/Users/17086/Downloads/FSIS-2019-0022-0010_attachment_1%20(1).pdf, respectively.

An excerpt from the ACS CAN comment states as follows:

> "…Concerns with synthetic nitrites arose approximately fifty years ago now, and, as a result, celery powder and other non-synthetic sources of nitrate or nitrite were developed in the 1990s to cure meats. Under current federal rules, meats processed with non-synthetic nitrates and nitrites must be labeled "uncured" and "no nitrates or nitrites added," despite the fact that these meats contain nitrates and nitrites. Consequently, these rules give consumers the false impression that these meats are not processed. ACS CAN objects to this misleading information, especially given that there is no science to demonstrate a lesser risk from non-synthetic nitrates and nitrites.
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> ACS CAN believes that consumers cannot reduce their cancer risk if they are not fully informed about whether or not meats are processed and calls for accurate labeling of meats processed with all nitrates or nitrites, natural or synthetic."

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Organic Eye believes that the weight of the evidence supports the conclusion that the use of nitrate-laden celery powder poses the same risks of cancer to the consumer as the use of artificially created and potentially carcinogenic nitrates and nitrites.

For this reason, celery powder should be removed from the NOSB National List as an ancillary ingredient because, contrary to the third bullet point of the NOSB policy listed above, it *is* present in significant levels, it *does* have a technical and functional effect on preserved foods, and it *is* harmful to human health under the provisions of 7 U.S.C. § 6517.

Furthermore, the FSIS' acknowledgement that labeling meats as uncured, when in fact celery powder is added as a curative agent, is misleading constitutes an implicit recognition that celery powder poses health risks that must be clearly disclosed to the consumer.

Bibliography

1) *ATSDR Case Studies in Environmental Medicine Nitrate/Nitrite Toxicity* https://www.atsdr.cdc.gov/csem/nitrate_2013/docs/nitrite.pdf, page 56.

2) *Citizen's Petition submitted by Consumer Reports to the Food Safety and Inspection Services (FSIS)* https://www.fsis.usda.gov/sites/default/files/media_file/2020-07/19-03-CSPI-082919.pdf

3) IARC Monograph on Ingested Nitrate and Nitrite https://www.ncbi.nlm.nih.gov/books/NBK326544/pdf/Bookshelf_NBK326544.pdf (2010).

4) IARC Monographs on the Evaluation of Carcinogenic Risks to Humans VOLUME 94 Ingested Nitrate and Nitrite, and Cyanobacterial Peptide Toxins https://monographs.iarc.who.int/wp-content/uploads/2018/06/mono94.pdf.

5) Collins, Karen, *Hot Dogs, Bacon, Celery Powder and Cancer Risk* *https://www.aicr.org/resources/blog/healthtalk-will-hot-dogs-and-bacon-preserved-with-celery-powder-still-increase-my-cancer-*

risk/#:~:text=Although%20natural%20ingredients%20like%20celery,of%20colorectal%20and%20stomach%20cancers, American Institute for Cancer Research.

6) Nargi, Lela, *The USDA Might Finally Update the Definition of Natural Nitrites and Nitrates Used in Processed Meats,* Food Print, 1/11/21.

7) Haspel, Tamar, *The 'uncured' Bacon illusion: It's actually cured, and it's not better for you,* The Washington Post, April 2019.

8) *Ingredients in Meat Products: Properties, Functionality and Applications*, pp 398-399, Rodrigo Tarte, editor, Springer, New York, published 2009.

9) Flynn, Dan, *CSPI/CR Request to Prohibit Nitrate Statements put on Track for Approval* Food Safety News December 17, 2020.

10) *Food Safety News* https://www.foodsafetynews.com/2020/12/cspi-cr-request-to-prohibit-nitrate-statements-put-on-track-for-approval/#:~:text=The%20two%20consumer%20groups%20by,sources%2C%20such%20as%20celery%20powder.

11) The American Cancer Society Cancer Action Network (ACS CAN), Public Justice Food Project (PJ Food Project), and Animal Legal Defense Fund (ALDF) comments to the Consumer Reports Petition to the FSIS: file:///C:/Users/User/Downloads/FSIS-2019-0022-0011_attachment_1%20(1).pdf and file:///C:/Users/17086/Downloads/FSIS-2019-0022-0010_attachment_1%20(1).pdf, respectively.