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National Organic Standards Board
USDA-AMS-NOP
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Room 2648-S, Mail Stop 0268
Washington, DC 20250-0268

Docket ID # AMS-NOP-24-0081

Re. HS: Malic acid reclassification

These comments to the National Organic Standards Board (NOSB) on its Spring 2025 agenda are submitted on behalf of Beyond Pesticides. Founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers, and farmworkers, Beyond Pesticides advances improved protections from pesticides and alternative pest management strategies that eliminate a reliance on pesticides. Our membership and network span the 50 states and the world.

Classification

The 2019 Technical Review (TR) of L-malic acid identifies three major processes of producing L-malic acid by fermentation. Although two of these processes involve microbial fermentation of nonsynthetic substrates, the third–most commonly used—is a two-step process that starts with a synthetic substrate. A fourth method of producing L-malic acid is ntirely synthetic. Furthermore, as in the case of citric acid, even when fermentation is used synthetic cehemical processes are used to extract L-malic acid from the fermentation broth. Therefore, L-malic acid should be classified as synthetic and removed from §605(a).

Listing

Once L-malic acid is reclassified, a listing motion for §605(b) is required.

Health and Environmental Impacts

Documentation contained in the 2019 TR on the health and environmental impacts of producing L-malic acid is incomplete. There are no restrictions on feedstock or fermenting

organisms in the National List listing. The following information comes from the patent[1] for manufacturing L-malic acid by fermentation:

"[A] substantial amount of l-malic acid can be accumulated in a culture medium by cultivating a strain of the species Aspergillus parasiticus Speare, Aspergillus flavus Link and Aspergillus oryzae (Ahl'ourg) Cohn." "The carbon source may be glucose, sucrose or molasses, fructose, maltose, mannose, galactose, sorbose, xylose, starch, sorbitol, glycerol, etc." It continues, "Peptone, ammonium chloride, ammonium nitrate, urea, ammonium sulfate or sodium nitrate can be used in an amount of from 0.2 to 1.5% as nitrogen source. In addition to the carbon and nitrogen sources, 0.015% of potassium dihydrogen phosphate (KH PO 0.015% of Patented Nov. 13, 1962 dipotassium hydrogen phosphate (Kg-IP0 0.01% of magnesium sulfate (MgS0 7H O), 0.01% of calcium chloride (CaCl-2H O), as well as 5 mgr./l. each of ferrous sulfate (FeSO-7H O) and sodium chloride are added to the culture medium. Further, 0.5 to 10% of organic acid, such as pyruvic and fumaric acid, or the salts thereof may be advantageously used together with the carbon source as fermentation accelerator. Additionally, 1 to 10% of sterile calcium carbonate or magnesium carbonate may be added…. After cultivation is completed, the mycelium is separated from the broth, containing l-malic acid, by filtration. The filtrate is then concentrated in vacuo, thereby yielding l-malic acid salt, such as calcium salt or magnesium salt."

It appears, therefore, that quite a variety of synthetic and nonsynthetic chemicals may be used in the manufacture of L-malic acid, and the NOSB should review them and the process for impacts on human health and the environment. If the NOSB intends to list L-malic acid on §605(a), it must include an annotation that ensures that such L-malic acid will be nonsynthetic.

Ancillary substances

The ancillary substances associated with this material have not been reviewed or even listed. This is an important piece that needs to be incorporated into the review of every material during sunset. Maleic (<500 ppm) and fumaric (7.5 ppm) acids are impurities that should be considered.[2]

Essentiality

L-malic acid is used to acidify fruit juices, though it is not restricted to that use by its listing. As an acidulant, the TAP review points out that there are several alternatives available, including organic vinegar and lemon juice, as well as the "nonsynthetic" lactic acid and citric acid, which are also on the National List—and also produced by fermentation.

Compatibility

Although the main use of L-malic acid is acidification, the choice of L-malic acid as an acidulant is based on its ability to recreate and improve flavors, which—for a synthetic adjuvant—is not consistent with organic processing. The TR defines its action as follows: "Malic

[1] 3,063,910 Method of Producing L-Malic Acid by Fermentation http://www.google.com/patents/US3063910.
[2] http://pubchem.ncbi.nlm.nih.gov/summary/summary.cgi?cid=222656#x321.

acid also intensifies and extends the impact of flavors, allowing producers to reduce the amount of added flavoring. For example, adding malic acid to jams, jellies, and fruit preparations results in a more natural flavor profile." It distinguishes this action from recreating and improving flavors lost during processing. If the NOSB accepts this distinction, it must still ask whether it is compatible with organic production to create artificial flavors.

Conclusion

We conclude that L-malic acid should be classified as synthetic. Information from the TR raises issues of compatibility. Ancillary substances have not been identified or assessed. Therefore, L-malic acid should not be listed on §605(a) or §605(b).

Thank you for your consideration of these comments.

Sincerely,

Terry Shistar, Ph.D.
Board of Directors