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Notice of Modification to the *List of Permitted Food Additives with Other Accepted Uses* to Enable the Use of Calcium Chloride as a Meat Tenderizing Agent in Certain Standardized Meat Products

Notice of Modification – *Lists of Permitted Food Additives*

Reference Number: [NOM/ADM-0096]

May 3, 2017

Bureau of Chemical Safety
Food Directorate
Health Products and Food Branch



Canada

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Summary

Food additives are regulated in Canada under [Marketing Authorizations](#) (MAs) issued by the Minister of Health and the *Food and Drug Regulations*. Approved food additives and their permitted conditions of use are set out in the [Lists of Permitted Food Additives](#) that are incorporated by reference in the MAs and published on Health Canada’s website. A petitioner can request that Health Canada approve a new food additive or a new condition of use for an already approved food additive by filing a food additive submission with the Department's Food Directorate. Health Canada uses this premarket approval process to determine whether the scientific data support the safety of food additives when used under specified conditions in foods sold in Canada.

Health Canada received a food additive submission seeking approval for the use of calcium chloride to tenderize cuts of beef and lamb meat. In this process, a 2.2% solution of calcium chloride is injected into the meat at a level of 5% by weight, immediately or within 24 hours after slaughter.

Calcium chloride already has a number of permitted food additive uses in a variety of foods but there are no provisions for its use in meat products. The results of Health Canada’s evaluation of available scientific data support the safety of the requested use of calcium chloride as a meat tenderizing agent in cuts of beef and lamb meat, as requested by the petitioner. Therefore, Health Canada has modified the [List of Permitted Food Additives with Other Accepted Uses](#) to enable this use of calcium chloride by adding the entries shown below to the list.

Modification to the *List of Permitted Food Additives with Other Accepted Uses*

Item No.	Column 1 Additive	Column 2 Permitted in or Upon	Column 3 Purpose of use	Column 4 Maximum Level of Use and Other Conditions
C.3.01	Calcium Chloride	(2) Cuts of prepared meat (Division 14)	(2) Meat tenderizing agent	(2) Good Manufacturing Practice provided that: (a) i) when sold as a cooked product, the meat contains a meat protein content of not less than 12 per cent; ii) when sold as an uncooked product, the meat contains a meat protein content of not less than 10 per cent; (b) a bone or a visible fat layer is not included in any calculation used to determine meat protein content for the purposes noted in (a) i) and (a) ii) above

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A cut of beef that is injected with a solution containing calcium chloride is considered to have been mechanically tenderized as defined in Section B.01.001 of the *Food and Drug Regulations* (Regulations). Therefore, beef products treated in this manner will be subject to the additional labelling requirements set out for mechanically tenderized beef in B.14.022 of the Regulations.

Rationale

Health Canada's Food Directorate completed a premarket safety and efficacy assessment of the requested use of calcium chloride. Calcium chloride has a stimulating effect on calpain, an enzyme that is naturally present in meat and which catalyzes a reaction that breaks down structural meat proteins. This is the reaction that is responsible for tenderizing meat during aging. The addition of calcium chloride increases the rate at which this occurs.

The safety assessment considered the toxicological and nutritional aspects of this additive, and found that the requested use is acceptable from a food safety perspective. The amount of additional calcium in meat as a result of treatment with calcium chloride does not contribute substantially to total dietary intake of calcium.

Adding a calcium chloride solution to cuts of prepared meat will result in the meat retaining water. Consequently, tenderized meat that has been treated with a calcium chloride solution is required to have the same minimum protein content that is required for solid cut meat treated with lactate salts or phosphate salts. The labelling requirements set out in B.01.090, B.01.091, and B.01.092, which apply to solid cut meat to which water has been added, therefore also apply to meat products treated with calcium chloride and that are presented as cuts of meat. These minimum meat protein content and labelling requirements are in place to address the concerns that increased water retention could negatively impact the nutritional quality of meat products.

The use of this additive is self-limiting because treating the meat with solutions containing higher concentrations of calcium chloride would negatively affect the taste of the meat. The minimum protein content requirements also serve to limit the amount of calcium chloride that may be used. Based on these considerations, as well as the low toxicity of calcium chloride, the maximum level of use has been established at levels consistent with "Good Manufacturing Practice".

Since no food safety concerns were identified by the premarket assessment, Health Canada has enabled the use of calcium chloride as a meat tenderizing agent, with conditions of use that include minimum protein requirements for solid cut meat products in particular, by modifying the *List of Permitted Food Additives with Other Accepted Uses* as shown in the above table.

Other Relevant Information

The *Food and Drug Regulations* require that food additives such as calcium chloride that do not have food-grade specifications set out in Part B of the Regulations meet the most recent food-

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grade specifications set out in the *Food Chemicals Codex* or the *Combined Compendium of Food Additive Specifications*. The *Food Chemicals Codex* is a compendium of standards for purity and identity for food ingredients, including food additives, published by the United States Pharmacopeial Convention. The *Combined Compendium of Food Additive Specifications* is prepared by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and published by the Food and Agriculture Organization of the United Nations.

Implementation and Enforcement

The above modification came into force **May 3, 2017**, the day it was published in [*List of Permitted Food Additives with Other Accepted Uses*](#).

The Canadian Food Inspection Agency is responsible for the enforcement of the *Food and Drugs Act* and its associated regulations with respect to foods.

Contact Information

Health Canada's Food Directorate is committed to reviewing any new scientific information on the safety in use of any food additive, including calcium chloride. Anyone wishing to submit new scientific information on the use of this additive or to submit any inquiries may do so in writing, by regular mail or electronically. If you wish to contact the Food Directorate electronically, please use the words "**calcium chloride**" in the subject line of your e-mail.

[Bureau of Chemical Safety, Food Directorate](#)

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