

**L: PERMITTED SUBSTANCES LISTS (PSL) FOR LIVESTOCK PRODUCTION (311 CLAUSE 5)**

<b><u>CANADIAN ORGANIC STANDARDS PSL*</u></b>	<b><u>COG'S GUIDE TO THE STANDARDS</u></b>
<p><b>5. PERMITTED SUBSTANCES LISTS FOR LIVESTOCK PRODUCTION</b></p> <p><b>5.1 Classification</b></p> <p>5.1.1 Substances listed in Tables 5.2 and 5.3 shall comply with prohibitions in 1.4 and 1.5 of CAN/CGSB-32.310. The following additional requirements apply to substances produced on substrates or growth media (for example, micro-organisms and lactic acid):</p> <ul style="list-style-type: none"> <li>a) if the substance includes the substrate or growth media, the substrate or growth media ingredients shall be listed in Table 5.2 or 5.3;</li> <li>b) if the substance does not include the substrates or growth media, the substance shall be produced on non-genetically engineered substrates or growth media, if commercially available.</li> </ul> <p>NOTE: In Canada, livestock feed must meet the compositional and labelling standards of the <i>Feeds Regulations, 1983</i>. Ingredients used in livestock feed must be approved and listed in Schedule IV or V of the <i>Feeds Regulations, 1983</i>. Some ingredients and products require registration (such as enzymes and milk replacers).</p>	<p>Prohibited materials and substances are listed in subclauses 1.4 and 1.5 of the Standard. For example, products that result from genetic engineering, and nano-technology are prohibited in general, along with veterinary drugs. In terms of the use of amino acids, phytase and vaccines for livestock and the use of vitamins for animal and human consumption, where there is no alternative and the substance is required, organic farmers can use forms of these substances that were made from or contain residues from genetically engineered (GE) products.</p> <p>These exceptions reflect difficult decisions. The organic community doesn't want to allow the use of any genetically engineered products, but members of the CGSB Technical Committee on Organic Agriculture considered these exceptions were warranted to help organic farmers maintain the health of their livestock.</p>

\*Organic production systems: permitted substances lists. CAN/CGSB-32.311-2020. Canadian General Standards Board. Dec. 2020. [publications.gc.ca/site/eng/9.854645/publication.html](https://publications.gc.ca/site/eng/9.854645/publication.html) 1

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SUBSTANCE NAME(S)	TABLE 5.2 – FEED, FEED ADDITIVES AND FEED SUPPLEMENTS: ORIGIN AND USAGE	
	CANADIAN ORGANIC STANDARDS* PSL	COG'S GUIDE TO THE STANDARDS
<b>Amino acids</b>	<p>“Organic sources, such as fishmeal, insect meal, brewer’s yeast, potato protein, corn gluten and distillers’ grains, shall be the first preference.</p> <p>When the supplementation with these organic sources does not meet amino acid requirements to produce a balanced feed as per 6.4.1 and 6.4.2 of CAN/CGSB-32.310, then:</p> <p>a) amino acids derived from biological sources by biofermentation and extracted, or isolated, by hydrolysis or by physical or other non-chemical means may be used;</p> <p>b) when such forms of lysine and methionine are not commercially available for use in monogastrics feeding, as an exception to 5.1.2 (32.311) and 1.4 a) of CAN/CGSB-32.310, all sources of lysine and methionine may be used.</p> <p>This annotation will be reviewed at the next revision of the standard. See Table 5.2 <i>Fish meal</i>.”</p>	<p>Ideally, animals will get adequate levels of amino acids from feed and forage. Pasture-raised birds and pigs can get a certain level of amino acids from consuming insects and grubs in the soil. The challenge is getting adequate levels for poultry and hogs when they are not foraging outside. Farmers can supplement their feed with organic insect meal, fish meal and various byproducts of human food production, such as brewer’s yeast, corn gluten and spent grains from distillers. However, two essential amino acids (lysine and methionine) are particularly challenging to provide.</p> <p>Methionine is essential for weight gain, egg production and feather formation in poultry. A grain-based diet low in methionine can result in increased feather pecking and poor growth. When birds are foraging on pasture, methionine is obtained from plant material and insects. During the winter, it has proven difficult to find organic feeds high in methionine, so the standard allows supplements.</p> <p>Similarly, lysine, an essential amino acid, is required for good growth rates in pigs and poultry. Supplemental lysine is allowed for both pigs and poultry if adequate levels cannot be obtained from other feed sources. The 2020 Canadian Organic Standard lists sources in preference, but if none of these are commercially available, any source, including a GE source can be used.</p> <p>If protein levels in the diet are increased to provide adequate levels of lysine and methionine, there can be excessive N excretion which, in turn, is problematic because it can lead to ammonia in the barn and water pollution from the litter. All forms of methionine, including GE</p>

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		forms, are allowed if alternatives are not commercially available. The order of preference is clearly stated in the standard.
<b>Antioxidants</b>	“Derived from materials produced by living organisms (such as, but not limited to, plants, animals and microorganisms) using substances listed in Table 6.3 <i>Extraction solvents and precipitation aids</i> . Example: tocopherols derived from plants.”	<p>Antioxidants help maintain the quality of the feed by preventing oxidation, which causes feed to become rancid and less palatable. The most common antioxidant used in non-organic livestock feed is ethoxyquin which is not allowed in organic production because it is synthetic (i.e., not “derived from materials produced by living organisms (such as, but not limited to, plants, animals and microorganisms) using substances listed in <i>Table 6.3 Extraction solvents, and precipitation aids</i>.”</p> <p>Natural sources of antioxidants include tocopherols (vitamin E), rosemary extract, lecithin, beet juice, oregano and thyme.</p>
<b>Colouring agents</b>	“From biological sources.”	Only colouring agents from biological sources can be used. Examples include alfalfa meal and dehydrated beets. Note that all the ingredients of the colouring agents must also be listed in Table 5.2. For example, a common feed colouring agent is tagetes meal, which is made from the Aztec marigold ( <i>Tagetes erecta</i> ). Although the petals of the marigold are allowed, tagetes meal is not permitted if it is made with ethoxyquin, a prohibited substance.
<b>Diatomaceous earth</b>	<p>“As a preventative livestock health care practice for control of internal parasites, and as an anti-caking agent. Must be food grade (non-calcined).</p> <p>As free choice, or up to 2% of total diet, or as an anti-caking agent in feed ration.”</p>	Diatomaceous earth (DE) consists of fossilized remains of diatoms, a type of hard-shelled algae. Food-grade (non-calcined) forms should be used. These are not as finely ground as the forms of DE powder sold for pool filters. Because of that, the food-grade forms are less likely to cause lung damage to livestock or farmers.

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<b>Energy feeds and forage concentrates (grains) and roughages (hay, silage, fodder, straw)</b>	<p>“Shall be obtained from organic sources. May include silage preservation products.</p> <p>See Table 5.2 <i>Hay or silage preservation products.</i>”</p>	
<b>Enzymes</b>	<p>“Derived from plants, animals or microorganisms. Examples include, but are not limited to, bromelain, bovine liver catalase, ficin, animal lipase, malt, pancreatin, pepsin, trypsin, proteases and carbohydrases.</p> <p>Animal-derived enzymes shall be free of Specified Risk Material (SRM).</p> <p>This annotation will be reviewed at the next revision of the standard.</p> <p>See Table 5.2 <i>Phytase.</i>”</p>	<p>Enzymes aid digestion and the absorption of poorly available nutrients. Carbohydrase, for example, increases the amount of energy available in feed by breaking complex carbohydrates down into simpler sugars.</p> <p>Protein in soybeans, for example, is more available thanks to protease. Enzyme supplements are rarely necessary if high-quality feed is provided, but they can help improve feed efficiency when livestock are fed lower-grade feedstuffs. Most of the permitted enzyme supplements are made from plants, animals or microorganisms. For example, bromelain can be made from pineapple, catalase from beef liver, and ficin from the sap of fig trees.</p> <p>However, the situation becomes more complicated with phytase. See Table 5.2 <i>Phytase.</i></p>
<b>Fishmeal</b>	<p>“All preservatives and other ingredients shall be listed in Table 5.2.”</p>	<p>Ideally organic fish meal should be used but given there is little organic fish meal available, non-organic fish meal is permitted provided that all other ingredients are allowed in feed (i.e., listed in Table 5.2).</p>

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Flavours	“Shall be organic.”	
Food waste	“Organic food for human consumption or by-products from organic food production (excluding abattoir waste).”	Livestock may be fed organic food waste (≥ 95% organic content) if it is part of a healthy, balanced diet. Food products containing 70-95% organic ingredients can only be fed according to the derogation in 6.4.7.
Hay or silage preservation products	<p>“Preference should be given to bacterial or enzymatic additives derived from bacteria, fungi and plants and food by-products (such as molasses and whey).</p> <p>The following acids may be used: lactic, propionic and formic.”</p>	<p>Only the substances listed in the annotation or permitted in livestock feed can be used with dry hay. For example, although salt is not specifically mentioned in this annotation, it would be allowed for hay treatment, as salt is permitted in livestock feed.</p> <p>Anhydrous ammonia is not allowed as a silage preservation agent because it is a synthetically derived substance that is prohibited by 1.5 of 310. Likewise, propionic products containing prohibited compounds such as ammonium hydroxide are not permitted. Always check with the supplier to ensure forage inoculants are not products of genetic engineering.</p>
Micro-organisms and yeasts	“If organic sources of yeast are not commercially available, non-organic yeast sources, including yeast autolysate, shall be used.”	<p>The annotation applies to yeasts and yeast cell wall products used as feed supplements, not yeast-derived protein. That is considered a protein feed and consequently only an organic source can be used.</p> <p>Yeast autolysate is also known as yeast extract. This is a concentrate of the soluble components of yeast cells, produced by autolysis, a process by which the cell wall is induced (mechanically or chemically) to rupture.</p>

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Milk replacer	<p>“Shall be organic if commercially available.</p> <p>Permitted for emergency use. Without antibiotics and animal fats or by-products.”</p>	<p>Milk replacer is a commercial product with multiple ingredients that has to be reconstituted with water before being fed. When searching for allowed sources of non-organic milk replacer, look for products that include all-milk protein (because the alternative is likely soy-based and assumed to be derived from genetically engineered soy). Ensure the product does not contain Animal Plasma Protein (a blood by-product). Milk replacers often contain animal fats, such as tallow or lard which are not permitted, but coconut oil is allowed. Ensure that the product is non-medicated. If the label does not have all the information, it must be obtained from the manufacturer.</p> <p>Milk replacer (whether organic or otherwise) cannot be used as a general part of the feeding regimen. The intent of the standard is that young mammals are fed whole organic milk (see CAN/CGSB-32.310, 6.4.3); milk replacer is to be used only in an emergency, such as the death of the dam. The subclause 6.4.3 also contains details about the use of milk replacer when a dam’s milk may transmit a disease to young or when the dam has been treated with antibiotics.</p> <p>It is advisable to have provisions in place for providing natural milk and colostrum to orphan animals (such as, using nurse mothers, adoption, and saving and freezing milk). At the same time, it is understood that birthing emergencies are not uncommon and that the welfare of young animals is the most important issue.</p>
Minerals, trace minerals, elements	<p>“Unprocessed rock dusts; ground animal or plant material (other than blood or bone meal); and seawater are preferred sources.</p>	<p>The most common trace minerals are iron, copper, zinc, manganese, cobalt, iodine and selenium. Permitted non-synthetic minerals come from naturally occurring sources (such as mined salt). A documented search for such sources is required before using synthetic sources. Even</p>

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	<p>Chelated and sulphated forms are permitted.</p> <p>If none of the aforementioned sources are commercially available, other versions are permitted except for forms containing or produced with EDTA or EDDHA.”</p>	<p>if chemically manufactured minerals are the only sources available, they cannot be used if they contain or were produced with EDTA or EDDHA.</p>
<b>Molasses</b>	<p>“Shall be organic.”</p>	
<b>Phytase</b>	<p>“Permitted when feed supplementation with phytase is recommended to reduce the phosphorus level in manure and thereby reduce the potential environmental consequence.</p> <p>As an exception, GE-derived sources of phytase are allowed even though they are not compliant to 5.1.2 of CAN/CGSB-32.311 or 1.4 a) of CAN/CGSB-32.310).</p> <p>This substance and annotation will be reviewed at the next revision of the standard.”</p>	<p>Much of the phosphorus (P) in plant tissue is stored as phytate-phosphorus, a form which is difficult for monogastrics, such as pigs and poultry, to digest.</p> <p>Phosphorus can be provided by plant foods containing P, such as corn and soybean meal. However, much of the inaccessible phosphorus in these foods is then excreted and causes eutrophication of nearby water bodies.</p> <p>To avoid this, farmers can supplement the feed with the enzyme phytase that helps break down phytate-P so that the animals can use more of the P in their diet. As of November 2020, genetically engineered sources of phytase will be permitted due to the lack of alternatives and the need for phytase supplements to maintain livestock health while minimizing the environmental impact.</p> <p>See also Table 5.2 <i>Enzymes</i>.</p>
<b>Pre-mixes</b>	<p>“Concentrated mixture of minerals and vitamins.</p> <p>From organic sources if commercially available.</p>	<p>Pre-mixes often include calcium, phosphorus, salt and trace minerals (including selenium) along with vitamins. They can also include probiotics.</p> <p>Medicated pre-mixes are not allowed. See also listings for the individual ingredients.</p>

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	All ingredients in pre-mixes shall be essential for animal nutrition, and listed in Table 5.2. Non-GE fillers, for example rice hulls, may be non-organic.”	
<b>Probiotics</b>	“Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.”	<p>Probiotics are micro-organisms (bacteria and yeasts) that provide health benefits when consumed. They help build immune systems to fight infection and increase the gut’s ability to absorb nutrients. <i>Lactobacillus</i> and <i>Bifidobacterium</i> are the most common examples.</p> <p>An agricultural product used as growing media to produce probiotics does not have to be organic. However, a probiotic cannot be used if the growing media/substrate is genetically engineered and remains in the final product.</p> <p>If the substrate was from a GE product (e.g., corn or soybean) but does not remain in the final product, it is allowed if there is no other alternative. See 5.1.2 b of the PSL.</p>
<b>Protein feeds</b>	“Shall be from organic sources.”	<p>Protein feeds include oilseed meals, alfalfa pellets and corn products. In 2020, fish meal was added and unlike other protein sources, fish meal does not need to be from organic sources (see Table 5.2 <i>Fish meal</i>).</p> <p>Note that mammalian and avian by-products (whether organic or otherwise) are prohibited.</p>
<b>Seaweed meal</b>		Seaweed meal cannot contain any added ingredients or preservatives unless they are listed in Table 5.2.

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Vitamins	<p>“Permitted for enrichment or fortification.</p> <p>Vitamin formulants that comply with Canadian regulations are accepted. Vitamins not compliant to 5.1.2 of CAN/CGSB-32.311 are permitted.”</p>	<p>Given the dominance of GE vitamins in the livestock feed supplement market, all forms of vitamins will be permitted, even genetically engineered forms.</p> <p>Vitamins cannot be used for the purpose of improving meat colour or any purpose other than enrichment and fortification of the feed.</p>

SUBSTANCE NAME(S)	TABLE 5.3 – HEALTH CARE PRODUCTS AND PRODUCTION AIDS: ORIGIN AND USAGE	
	CANADIAN ORGANIC STANDARDS* PSL	COG'S GUIDE TO THE STANDARDS
Acetylsalicylic acid	“Aspirin.”	Aspirin, or acetylsalicylic acid (A.S.A.), is a salicylate drug, often used as an analgesic to relieve minor aches and pains. Any source is allowed for livestock health care.
Acids	<p>“Ascorbic, acetic, propionic, citric, formic and lactic acids and vinegar.</p> <p>Permitted for all uses such as treatment of water and bedding. “</p>	Water pH has an impact on animal health; acids can be added to reduce pH, which in turn reduces bacterial load.
Activated charcoal	“Shall be of plant origin.”	Used to treat poisoning and sometimes bloat.
Alcohol, ethyl (ethanol)	“Permitted as a disinfectant and sanitizer.”	Also known as “grain” or “drinking” alcohol.

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Alcohol, isopropyl	Permitted as a disinfectant.	Also called “rubbing alcohol.” It is used as a topical antiseptic for treatment of wounds and helps prevent infection.
Antibiotics	“See 6.6 of CAN/CGSB-32.310, for conditions pertaining to antibiotic use in livestock.  See Table 5.3 <i>Antibiotics, oxytetracycline.</i> ”	See guidance for 6.6.2 & 6.6.6 of CAN/CGSB 32.310, <i>Organic Production Systems – General Principles and Management Standards.</i>
Antibiotics, oxytetracycline	“For emergency use for bees. The equipment shall be destroyed in accordance with 7.1.15.7 of CAN/CGSB-32.310; treated bees do not need to be destroyed if they are taken out of organic production.”	Oxytetracycline is allowed when the health of a honeybee colony is threatened by a serious disease outbreak, for example a serious case of American Foulbrood. Details of how it can be used are provided in 7.1.15.7 of CAN/CGSB 32.310.
Anti-inflammatory	“Non-steroid anti-inflammatories such as ketoprofen. Preference shall be given to alternative products, such as those listed in Table 5.3, <i>Botanical compounds; and Homeopathy and biotherapies.</i>  To reduce inflammation. See 6.6.4 c) 2) of CAN/CGSB-32.310.”	In 6.6.4 c)2, the standard states that anti-inflammatories shall be “non-steroid” or, as they are commonly referred to, “NSAIDS.”  Anti-inflammatory refers to the property of a substance or treatment that reduces inflammation. Anti-inflammatory drugs make up about half of analgesics (pain relievers). They alleviate pain by reducing inflammation, as opposed to opioids which affect the brain. Many steroids, specifically glucocorticoids, reduce inflammation or swelling by binding to cortisol receptors. These drugs are often referred to as corticosteroids.  Common examples of NSAIDS include aspirin, ketoprofen, flunixin and meloxicam. Withdrawal time for meat and milk differs depending on the drug – double the time required on the label or 14 days,

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		whichever is longer. In addition to medical drugs, many herbs are reported to have anti-inflammatory qualities.
Biologics		<p>See the definition of “Veterinary biologic” in Clause 3 of CAN/CGSB 32.310. A veterinary biologic is a substance or mixture of substances derived from animals, helminthes (parasitic worms or nematodes), protozoa (one-celled organisms) or micro-organisms (e.g., bacteria). They can also be of synthetic origin. Biologics are used for diagnosis, treatment and prevention of a disease or disorder. They involve an immunological response to a particular disease agent.</p> <p>The Canadian Health of Animals Regulations stipulates that “a veterinary biologic does not include an antibiotic except when it is used as a preservative or when it is an integral part of the veterinary biologic.”</p> <p>It is understood that some vaccines contain trace amounts of antibiotics as preservatives. The intent of this standard is to allow the use of these vaccines, until such time as vaccines without antibiotics become available. See <i>Vaccines</i> in this table.</p> <p>See <a href="http://www.organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202011.pdf">www.organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202011.pdf</a></p>
Botanical compounds	“Botanical preparations, such as atropine, butorphanol and other medicines from herbaceous plants shall be used according to label specifications. Substances containing petroleum-	Botanical compounds are derived from plants and can be used for a variety of purposes. Essential oils fall under this category. Citrus extract is a common botanical used in cleaners.

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	derived formulants, such as propylene glycol, shall not be fed to livestock.”	<p>All sources, whether organic or not, are allowed for livestock health care, provided they comply with Paragraph 1.4.a (i.e., they are not derived from products of genetic engineering) however “substances containing petroleum-derived formulants, such as propylene glycol, shall not be fed to livestock.”</p> <p>See <a href="https://www.organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202020%2011.pdf">organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202020%2011.pdf</a></p>
Calcium borogluconate	“For milk fever. No withdrawal period required.”	Used to restore blood calcium levels when cows, sheep or goats suffer from milk fever after giving birth. Milk fever occurs when calcium levels are depleted by the labour process and sudden production of large quantities of milk. Methods to prevent milk fever include breeding for less milk, improving access to pasture, reducing stress and altering feeding strategies.
Chlorohexidine	<p>“For surgical procedures conducted by a veterinarian. To be used as a post-milking teat dip when alternative germicidal agents and physical barriers have lost their effectiveness.</p> <p>See Table 5.3 <i>Teat dips and udder wash.</i>”</p>	This is a chemical antiseptic which is active against bacteria and yeasts.
Colostrum whey	“Probiotic.”	This product is derived from cow colostrum. It does not need to be from organic sources unlike colostrum (see below).
Colostrum	“Shall be organic if commercially available.”	Colostrum is the first milk released from the udder after the animal gives birth. It is richer in protein than milk and contains antibodies which protect the newborn from disease. It can be collected and stored

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SUBSTANCE NAME(S)	TABLE 5.3 – HEALTH CARE PRODUCTS AND PRODUCTION AIDS: ORIGIN AND USAGE	
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		<p>frozen for emergency use for up to a year without loss of quality. Try to always have some on hand for emergencies.</p> <p>Colostrum produced on the farm is superior to that from elsewhere because it provides immunity to the existing pathogens in the local environment. The organic colostrum products on the market are intended as a natural health supplement for humans.</p>
Copper sulphate	"As an essential nutrient (source of copper and sulphur) and for topical use (foot baths)."	Also called bluestone. Copper sulphate produced using sulphuric acid is allowed.
Diatomaceous earth	<p>"For use in control of external parasites and as a preventative practice for control of internal parasites.</p> <p>For internal use, diatomaceous earth shall be food grade (non-calcined)."</p>	<p>See Table 5.2 for use in feed. Diatomaceous earth (DE) consists of fossilized remains of diatoms, a type of hard-shelled algae. Non-calcined (food-grade) forms should be used. These are not as finely ground as the forms of DE powder which are sold for pool filters, and therefore the food-grade products are less likely to cause lung damage to livestock or farmers.</p> <p>External parasite control is achieved by dusting the animals and the litter or bedding area. It is best to guard against inhaling the DE dust when applying it.</p>
Electrolytes	<p>"Including, but not limited to: CMPK (Calcium, Magnesium, Phosphorus, Potassium), calcium propionate and calcium sulphate. Shall not contain antibiotics.</p> <p>Orally or by injection."</p>	<p>Electrolyte solutions can be used to treat illness, such as scours (diarrhea). Electrolyte supplements can be added to livestock drinking water to prevent illness (usually in times of stress, such as shipping).</p> <p>Most electrolyte solutions contain sodium, chloride and potassium, as well as glycine, dextrose, glucose and alkalizing agents (bicarbonate, citrate, lactate, acetate or propionate). Many electrolyte solutions also</p>

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		<p>include direct-fed microbials. These are bacteria that are meant to re-establish the correct ratios of gut microflora.</p> <p>Usually these probiotics consist of <i>Lactobacillus</i> and <i>Bifidobacterium</i> species, both of which work against <i>E. coli</i> and are beneficial to the intestinal environment. Such microbials are allowed, provided they are not products of genetic engineering.</p>
Formic acid	“For apicultural use, to control parasitic mites. This substance may be used after the last honey harvest of the season and shall be discontinued 30 days before the addition of honey supers.”	Formic acid is the simplest carboxylic acid. It occurs naturally, most notably in the venom of bee and ant stings. It is prepared commercially through a chemical process.
Formulants (inerts, excipients)	“Shall be used in conjunction with substances listed in Table 5.3. Formulants are not subject to 1.4 or 1.5 of CAN/CGSB-32.310 or 5.1.2 of this standard.”	In livestock health care products and aids, formulants that would otherwise be prohibited due to the restrictions in 1.4 and 1.5 of 310 are permitted.
Glucose		Glucose is a monosaccharide (or simple sugar), also known as grape sugar. Glucose is produced commercially via the enzymatic hydrolysis of starch. Corn, rice, wheat, potato, cassava, arrowroot and sago are all used (as the source of starch) in various parts of the world. Glucose is used to treat ketosis (pregnancy toxemia), among other livestock symptoms and diseases. For health care purposes, glucose is not required to be organic.

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Glycerol (glycerine, glycerin)	<p>“Shall be from organic sources if commercially available.</p> <p>Shall be from vegetable oil or animal fat.</p> <p>Shall be produced using fermentation or by hydrolysis.”</p>	<p>Glycerine (glycerol) is a sugar alcohol typically obtained from plant and animal sources. It is also a by-product in the production of biodiesel. Organic versions are more likely to be produced from organic corn or soy.</p>
Homeopathy and biotherapies		<p>Homeopathic therapy involves treatments that can produce, in a healthy animal, symptoms similar to those of the illness. According to homeopaths, serial dilution, with shaking between each dilution, removes the toxic effects of the remedy while the qualities of the substance are retained by the diluent (water, sugar or alcohol).</p> <p>Biotherapy is any form of treatment that uses the body's natural abilities to fight infection and disease. It is used as a generic term for a number of alternative medicine practices (e.g., herbal medicines, bioenergy treatment, acupuncture, acupressure and so on) which are generally regarded as safe. Whether they are effective is a matter for the operator to determine. See <a href="https://www.organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202011.pdf">organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202011.pdf</a></p>
Honey	“Shall be organic.”	
Hydrated lime (calcium hydroxide)	“Shall not be used to deodorize animal wastes.”	<p>This is also called slaked lime (calcium hydroxide) and is not the same as quicklime. It can be used as an astringent compound, topically in solutions or lotions. It can also be used as whitewash to help disinfect livestock facilities.</p>

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Hydrogen peroxide	<p>“Pharmaceutical grade hydrogen peroxide is permitted for external use (disinfectant).</p> <p>Food-grade hydrogen peroxide is permitted for internal use (for example, added to livestock drinking water).”</p>	<p>There are many grades of hydrogen peroxide. Pharmaceutical (or cosmetic) grade hydrogen peroxide at 3.5% is the variety found in drug stores; it is used as antimicrobial agent for treating wounds and as a sanitizing agent. Food-grade hydrogen peroxide is either 35% or 50%. Note that the food-grade label does not mean this product can be ingested. Food-grade hydrogen peroxide is used as an antiseptic in food handling and preparation, and to disinfect water lines. It is sometimes added to livestock water to improve water quality, reduce bacteria counts or improve performance. For livestock water, 30 ppm of food-grade hydrogen peroxide is recommended.</p> <p>For example, to achieve 30 ppm H<sub>2</sub>O<sub>2</sub>: add 10 oz. (295 ml) of 35% to 1000 gallons (3785 litres) of water or add 30 ml to 475 litres.</p> <p>Follow product instructions when handling food-grade hydrogen peroxide—this is a highly reactive product.</p>
Iodine	<p>“If used as a topical disinfectant: permitted iodine sources include potassium iodide and elemental iodine.</p> <p>If used as a cleaning agent: non-elemental iodine shall be used; iodine shall not exceed 5% solution by volume (example: iodophors). Use shall be followed by a hot-water rinse.”</p>	<p>Iodine is a potent antiseptic. Tincture of iodine is 10% elemental iodine in an ethanol base; it also contains iodides. Iodophor iodine is alcohol-free.</p> <p>Iodophors were developed to overcome the side effects associated with elemental iodine. For cleaning, the more complex iodine compounds or iodophors are used because they are less likely to contaminate ground or surface water or soil.</p>

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Iron products	“May be supplied by ferric phosphate, ferric pyrophosphate, ferrous lactate, ferrous sulphate, iron carbonate, iron gluconate, iron oxide, iron phosphate, iron sulphate or reduced iron.”	This list includes all the possible sources for iron.
Lanolin	“For external use only, such as udder balm (ointment).”	
Local anesthetics	“Such as lidocaine. Use of pharmaceutical local anesthetics shall be followed by withdrawal periods of 90 days for livestock intended for slaughter, and seven days for dairy animals.  Preference shall be given to alternatives, such as clove oil, listed in Table 5.3 <i>Botanical compounds; Homeopathy and biotherapies.</i> ”	Cold (ice) is a proven natural anesthetic. Acupuncture is reported to be a natural anesthetic, as well as many plants (e.g., cloves, oregano, aloe vera, echinacea, garlic oil, tarragon, lavender) and bee propolis. It is preferable to use such materials and techniques rather than pharmaceutical anesthetics, such as lidocaine.
Magnesium sulphate	“Mined sources. A source of magnesium and sulphur.”	This is Epsom salts. This substance can be used as a laxative and for treating hypomagnesaemia (grass staggers). It can be used as a mild astringent to remove splinters, treat infections and assist healing of bruises and muscle strain. Note that synthetic sources of mined magnesium sulphate are allowed.
Mineral oil	“For external use.”	Mineral oil or liquid paraffin is a by-product in the distillation of petroleum to produce gasoline. It can be used to suffocate parasites topically, such as mites on the legs and feet of poultry.

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Minerals, trace minerals, elements	<p>“Non-synthetic chelated or sulphated minerals. Examples include oyster shell, calcium choride and magnesium oxide.</p> <p>Synthetic nutrient minerals may be used if non-synthetic sources are not commercially available.</p> <p>Minerals from any source are permitted for medical use.”</p>	<p>The most common trace minerals are iron, copper, zinc, manganese, cobalt, iodine and selenium. Non-synthetic minerals would be from naturally occurring sources (such as mined salt or bentonite clay), while synthetic minerals are chemically manufactured.</p> <p>Various forms of minerals are allowed, including zinc oxide used as an antiseptic ointment, and zinc sulphate used in footbaths or for oral therapy if the diet is deficient in zinc.</p> <p>Colloidal sulphur (for health care) produced using electrolysis is allowed, as is colloidal silver produced by a biofermentation process, as long as the genetically engineered restrictions specified in 1.4.a (32.310) are met.</p>
Micro-organisms and yeasts	<p>“If organic sources of yeast are not commercially available, non-organic yeast sources derived from living yeast, including yeast autolysate, shall be used.”</p>	<p>The annotation applies to yeasts and yeast cell wall products. Yeast autolysate is also known as yeast extract. This is a concentrate of the soluble components of yeast cells, produced by autolysis, a process by which the cell wall is induced mechanically or chemically to rupture.</p> <p>As well as being a nutritional supplement (by providing B vitamins), yeast autolysates have been shown to strengthen the immune system and decrease <i>E. coli</i> colonization in broilers and livestock which have sickened from ingesting mouldy feed.</p>
Oxalic acid	<p>“For mite control in honeybee colonies.”</p>	<p>This is strong organic acid, about 10,000 times stronger than acetic acid. This substance can be used either by the vapourizer method or the acid-sugar syrup solution drip method. The BC Ministry of Agriculture has a factsheet on Varroa Mite Control (Apiculture Factsheet # 221) which describes how to use this substance.</p>

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Oxytocin	“For post-parturition therapeutic use. Meat from treated animals will not lose its organic status. See 6.6.10 d) of CAN/CGSB-32.310, for criteria pertaining to the mandatory withdrawal period.”	Oxytocin is a mammalian hormone, best known for its roles in female reproductive functions. It can simulate placenta cleaning and milk let-down. Oxytocin is not allowed to be used to stimulate labour for the convenience of the operator.
Paraffin	“Shall be food-grade. For use in hives.”	Paraffin wax is used as a preservative to protect the wood exterior of bee hives from the elements or to disinfect hive parts from a hive infected with American Foul Brood virus.
Parasitocides and anti-microbials	“Shall respect requirements set out in 6.6 of CAN/CGSB-32.310 with regard to the use of internal parasitocides.”	<p>Parasitocides are pesticides for the control of internal and external parasites. Anti-microbials are natural or synthetic drugs which inhibit or kill bacteria.</p> <p>The three main classes of anti-microbials are:</p> <ul style="list-style-type: none"> <li>- antibiotics which destroy organisms within the body and to which restrictions apply for their use (see 6.6.2, 6.6.10, 6.6.11 and 6.6.12) in 32.310);</li> <li>- disinfectants used on non-living surfaces; and</li> <li>- antiseptics used on living tissue.</li> </ul> <p>Anti-fungal medications, anti-virals, and anti-parasitics are also considered anti-microbials, as are natural compounds which have anti-microbial properties (e.g., essential oils).</p>
Physical teat seals	“All sources are permitted. Shall be free from antibiotics.	These aids prevent bacteria entering the teat canal at drying off. They reduce the incidence of mastitis and the need to use antibiotics for treatment. OrbeSeal is one example; it is not a medication.

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	For post-lactation use. Shall be completely removed prior to nursing or milking.  Shall be prescribed and administered under veterinary supervision.”	
Plant oils	“To control external parasites.”	See <a href="http://www.organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202011.pdf">www.organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202011.pdf</a>
Prebiotics	“From organic sources if commercially available.”	Prebiotics are defined in Clause 3 of 310 as fibre foods and potential carriers for bacteria. These include inulin and oligosaccharides which can be extracted from plants such as Jerusalem artichoke, chicory and agave. They stimulate the growth of the beneficial bacteria (e.g., <i>Bifidobacterium</i> spp.).
Probiotics	“Probiotics may be administered orally, as dietary supplements, via pharmaceutical preparations in the form of capsules, tablets, alginate gels, or dry powder.”	Probiotics are micro-organisms (bacteria and yeasts) that provide health benefits when consumed. They help build immune systems to fight infection and increase the gut’s ability to absorb nutrients. <i>Lactobacillus</i> spp. and <i>Bifidobacterium</i> spp. are most common examples. See <a href="http://organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202011.pdf">organicfederation.ca/sites/documents/Animal%20Healthcare%20Products%20and%20Production%20Aids-%20final%20dec%202011.pdf</a>
Propylene glycol	“May only be used as an ingredient in foot baths.”	Propylene glycol is not allowed for internal use, only in foot baths.
Sedatives	“Such as xylazine.”	Sedatives are allowed when carrying out permitted physical alternatives (see 6.6.4). Xylazine is just one example; other products (e.g., butorphanol) are allowed. All have withdrawal times twice that specified on the label or 14 days, whichever is longer.

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Selenium products	<p>“Derived from sodium selenate or sodium selenite.</p> <p>May be used to address documented deficiencies in the stock, soils or feed supplies.</p> <p>See Table 5.3 <i>Minerals, trace minerals, elements.</i>”</p>	<p>Selenium is an essential element for most animals. It may be used in this case as a nutritional supplement, but the operator would need to show that their farm soil, feed or animals are deficient in selenium. This could be accomplished from soil or plant analysis, or recommendations from a veterinarian.</p> <p>Injections of selenium can be given to newborn animals (particularly lambs) in areas with selenium-poor soil as a preventative measure to reduce the risk of white muscle disease.</p>
Sodium hydroxide	<p>“For use in dehorning paste.”</p>	<p>Note that dehorning is considered a last resort. See 6.6.4 a) of 310.</p>
Sulphur	<p>“For control of external parasites.”</p>	<p>High concentrations (&gt;5.3%) of sulphur solution have been shown to help eliminate northern fowl mites. Sulphur and lime sulphur are also used for mange and lice control in cattle. See <a href="http://www.organiccentre.ca/docs/animalwelfare/awtf/lice_control.pdf">www.organiccentre.ca/docs/animalwelfare/awtf/lice_control.pdf</a></p>
Teat dips and udder wash	<p>“Substances, such as alcohol, iodine, hydrogen peroxide, chlorine dioxide and ozone, can be used as disinfectants for a pre- or post-teat dip or udder wash if they are registered for this use by Canada's <i>Food and Drug Regulations.</i></p> <p>Chlorhexidine can be used as a post-milking teat dip if alternative germicidal agents and physical barriers have lost their effectiveness.</p> <p>See Table 5.3 <i>Chlorhexidine.</i>”</p>	

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Thymol	<p>“See Table 5.3 <i>Botanical compounds</i> for thymol derived from botanical sources.</p> <p>Thymol that is not derived from botanical sources may only be used in foot baths.”</p>	<p>Thymol made from the thyme plant is allowed for all uses. Synthetic forms of thymol that is produced in a lab, however, can only be used in foot baths.</p>
Vaccines	<p>“Vaccines may be used in prevention of diseases. If vaccines compliant to 5.1.2 of this standard are not commercially available, or are ineffective, vaccines not compliant to 5.1.2 are permitted.”</p>	<p>If there are no commercially available sources of non-GE vaccines, or if these are ineffective, GE sources can be used.</p>
Vitamins	<p>“Vitamin formulants that comply with Canadian regulations are accepted. Vitamins not compliant to 5.1.2 of this standard are permitted.</p> <p>Orally, topically or by injection.”</p>	<p>Given the dominance of GE vitamins in the livestock feed supplement market, all forms of vitamins will be permitted, even genetically engineered forms.</p>

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