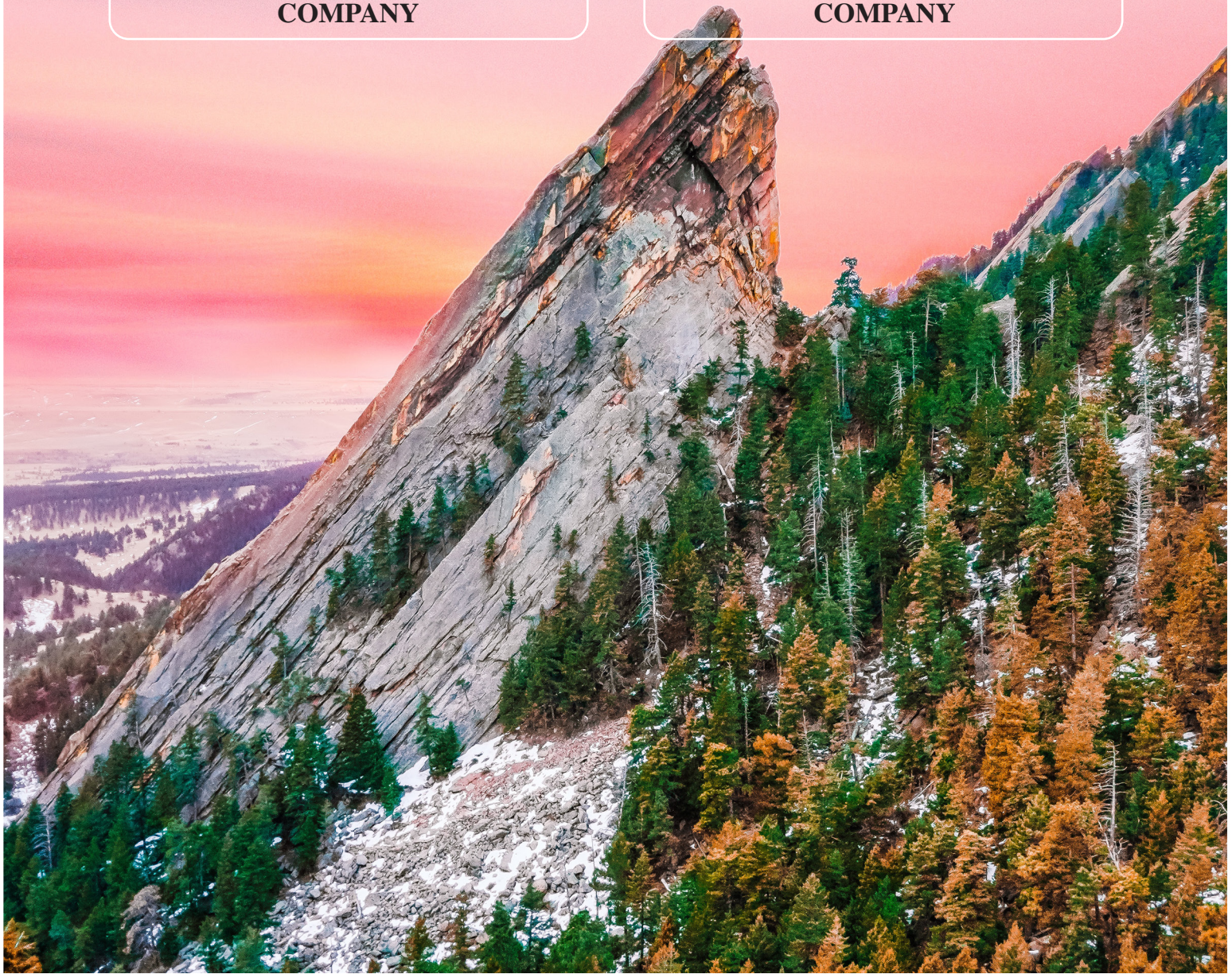
COLORADO VETERINARY PRODUCTS

COMBINED FULL CATALOG
2023

COLORADO SERUM COMPANY

PROFESSIONAL BIOLOGICAL COMPANY



THE PEAK OF QUALITY
SINCE 1923

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ANTHRAX SPORE VACCINE

Nonencapsulated Live Culture

VLN: 188 / PCN: 1011.00

Catalog #	Size	Dose
#19102	10 ml	10 dose
#19104	50 ml	50 dose

For use in healthy cattle, sheep, goats, swine and horses as an aid in the prevention of anthrax. A suspension of viable B*acillus anthracis* Sterne Strain 34F2 spores in saponin.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 42 days before slaughter.

Shake well before use.

Do not mix with other products.

Use entire contents when first opened.

Do not use disinfectants to sterilize equipment.

Safety in pregnant animals is unknown.

DOSAGE & ADMINISTRATION: Recommended dose is 1.0 ml subcutaneously. Revaccinate in 2-3 weeks in heavily contaminated areas. Historically, annual vaccination is recommended. Contact veterinarian for advice.

The region of the neck just in front of the shoulder is a convenient site for administering the vaccine to cattle and swine. Sheep and goats should be vaccinated subcutaneously on their side (mid-thorax) halfway between the front and back legs. Horses may be vaccinated subcutaneously in the middle portion of the neck or in the brisket at a time when the animals are not being heavily worked.

A light to moderate transient swelling may appear at the site of injection.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent. Adverse reactions have been reported in young and miniature horses. Consult your veterinarian when considering vaccination of exotic or sensitive species and immunologically immature or stressed animals. Animals being vaccinated or recently vaccinated should not receive antibiotics, as antibiotics will interfere with effective vaccination.

Inactivate unused contents before disposal.

In case of human exposure, consult a physician.

FOR VETERINARY USE ONLY

BOVI-SERA SERUM ANTIBODIES

Trueperella Pyogenes-Escherichia Coli-Mannheimia Haemolytica-Pasteurella Multocida-Salmonella Typhimurium Antibody

Bovine Origin

VLN: 188 / PCN: 3391.00

Catalog #	Size
#13551	20 ml
#13553	250 ml
#13555	1000 ml

For use as an aid in the prevention and treatment of enteric and respiratory conditions caused by the micro-organisms named.

This product was licensed prior to the requirement to establish a minimum age for use. Safety in pregnant animals is unknown.

In case of human exposure, contact a physician.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject subcutaneously or intramuscularly.

FOR PREVENTION:
Calves: 20 - 40ml - as soon after birth as possible.
Cattle: 50 - 75ml
Sheep: 10 - 15ml

FOR TREATMENT:
Calves: 40 - 100ml
Cattle: 75 - 150ml
Sheep: 20 - 40ml
Administer at 12 - 24 hour intervals until improvement is noted.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

Contains thimerosal and phenol as preservatives.

FOR MORE INFORMATION SEE PAGE 18 + 19

FOR VETERINARY USE ONLY

BOVIB-LEPTO 5

Campylobacter Fetus-Leptospira Canicola-Grippotyphosa-Hardjo-Icterohaemorrhagiae-Pomona Bacterin

Killed Bacterin

VLN: 188 / PCN: 2863.00

Catalog #	Size	Dose
#11572	20 ml	10 dose
#11574	100 ml	50 dose

Inactivated aluminum hydroxide adsorbed, cultures of Campylobacter fetus subsp. veneralis, leptospira canicola, grippotyphosa, hardjo, icterohaemorrhagiae, and pomona.

For use in healthy cattle as an aid in the prevention of infertility, delayed conception, abortions, and losses from diseases caused by the micro-organisms named.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

DOSAGE & ADMINISTRATION: Administer 30 to 60 days prior to breeding. Inject 2 ml subcutaneously. A second dose at 3 to 4 weeks is recommended for exposed herds and in endemic areas. Revaccinate annually using a single dose.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

Contains formalin, penicillin, streptomycin, and thimerosal as preservatives.

FOR VETERINARY USE ONLY

CAMPYLOBACTER FETUS BACTERIN

Bovine Origin

Killed Bacterin

VLN: 188 / PCN: 2862.10

Catalog #	Size	Dose
#11562	20 ml	10 dose
#11564	100 ml	50 dose

For use in healthy female cattle as an aid in the control of Bovine Genital Campylobacteriosis (vibriosis) caused by the subsp. named.

An aqueous suspension of inactivated cultures of Campylobacter fetus subsp. veneralis in a mineral oil adjuvant.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Shake well before use.

Use entire contents when first opened.

Do not vaccinate within 60 days before slaughter.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously in the top part of the neck.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

Contains thimerosal and formalin as preservatives.

FOR VETERINARY USE ONLY

CAMPYLOBACTER FETUS-JEJUNI BACTERIN

Ovine Origin

Killed Bacterin

VLN: 188 / PCN: 2861.00

Catalog #	Size	Dose
#11512	50 ml	10 dose
#11514	250 ml	50 dose

This product has been shown to be effective for the vaccination of healthy ewes against Ovine Genital Campylobacteriosis (vibriosis) caused by Campylobacter fetus and Campylobacter jejuni.

This product was licensed prior to the requirement to establish a minimum age for use. The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

Safety in pregnant animals is unknown.

An aqueous suspension of inactivated cultures of Campylobacter fetus and Campylobacter jejuni containing aluminum hydroxide as an adjuvant.

In case of human exposure, contact a physician.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject 5 ml subcutaneously in the fold of the skin behind the axillary space, shortly before breeding. Repeat in 60 to 90 days. Historically, annual vaccination is recommended. Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent. Local reactions of a transitory nature, common to adjuvanted products, may be observed.

Contains thimerosal and formalin as preservatives.

FOR MORE INFORMATION SEE PAGE 22

CASE-BAC

Corynebacterium Pseudotuberculosis

Bacterin - Toxoid

Killed Bacterin-Toxoid

VLN: 188 / PCN: 7A94.00

Catalog #	Size	Dose
#11442	20 ml	10 dose
#11444	100 ml	50 dose

This product has been shown to be effective for the vaccination of healthy sheep against Caseous Lymphadenitis.

This product was licensed prior to the requirement to establish a minimum age for use.

The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously in axillary space. Repeat in 4 weeks in opposite axillary space. Historically, annual vaccination is recommended. Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent. Safety in pregnant animals is unknown.

In the event of human exposure, consult a physician.

Contains thimerosal and formalin as preservatives.

FOR MORE INFORMATION SEE PAGE 22

CASEOUS D-T

Clostridium Tetani-Perfringens
Type D-Corynebacterium Pseudotuberculosis
Bacterin-Toxoid
Killed Bacterin Toxoid

VLN: 188 / PCN: 7894.00

Catalog #	Size	Dose
#11452	20 ml	10 dose
#11454	100 ml	50 dose

For use in healthy sheep as an aid in the prevention of enterotoxemia associated with Clostridium perfringens Type D; toxemia caused by Clostridium tetani; and Caseous lymphadenitis, a disease characterized by localized collections of pus in the tissues of the body caused by Corynebacterium pseudotuberculosis.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously in axillary space. Repeat in 4 weeks in opposite axillary space. Historically, annual vaccination of a single dose is recommended. Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent. Delayed treatment could result in an irreversible reaction. Following vaccination, slight lameness (soreness) in lambs may be observed, along with lethargy, in a percentage of the mature animals. It has also been shown that little or no benefit can be expected when animals with visible signs of the disease are vaccinated. Those showing infection should be disposed of or immediately culled from the flock and quarantined.

The vaccine will be ineffective if the vaccinating sheep already have the aforementioned diseases and could make the condition worse.

This product is not recommended for goats, as previous safety studies showed a higher than accepted presence of fever and lethargy following vaccination.

In case of human exposure, consult a physician.

Contains thimerosal and formalin as preservatives.

FOR VETERINARY USE ONLY

CHLAMYDIA ABORTUS BACTERIN

Killed Bacterin

VLN: 188 / PCN: 2120.10

Catalog #	Size	Dose
#11532	20 ml	10 dose
#11534	100 ml	50 dose

This product has been shown to be effective for the vaccination of healthy ewes against Ovine Enzootic Abortion.

This product was licensed prior to the requirement to establish a minimum age for use. The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

Safety in pregnant animals is unknown.

An aqueous suspension of inactivated cultures of Chlamydia abortus, abortigenic serovar, emulsified with a mineral oil adjuvant.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 60 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously in the upper part of neck 60 days prior to breeding. Repeat the dose in 30 days. Historically, annual vaccination is recommended. Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

Use of products containing oil adjuvants may result in formation of a transient or more permanent granuloma of small to moderate size.

In case of human exposure, contact a physician.

Contains thimerosal and formalin as preservatives.

FOR MORE INFORMATION SEE PAGE 22

FOR VETERINARY USE ONLY

CLOSTRIDIUM PERFRINGENS TYPES C&D ANTITOXIN

Equine Origin

VLN: 188 / PCN: 6221.00

Catalog #	Size
#13701	50 ml
#13703	250 ml

This potent multivalent antitoxin is specific for use as an aid in the temporary prevention or treatment of Clostridial enterotoxemia in cattle, sheep and goats caused by Types B, C and D toxin and in swine when caused by Type C. Type D is not known to cause disease in swine and Type B is not a significant problem in North America.

This product was licensed prior to the requirement to establish a minimum age for use.

Safety in pregnant animals is unknown.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter. Shake well before use. Use entire contents when first opened. Do not mix with other products.

DOSAGE & ADMINISTRATION: For prevention lasting approximately 3 weeks the following doses should be administered subcutaneously:

Suckling lambs, goats and pigs: 5ml
Suckling calves: 10ml
Feeder lambs and pigs: 10ml
Feeder calves and cattle: 25ml

For treatment, double the preventative dose.

A more rapid effect can be achieved by intravenous administration, with repeat dosages as often as 12 hour intervals.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent. Do not use in equine species.

In case of human exposure, contact a physician.

Contains phenol and thimerosal as preservatives.

FOR MORE INFORMATION SEE PAGE 21

ESSENTIAL 1

Clostridium Haemolyticum-Bacterin
(Red Water)
Killed Bacterin

VLN: 188 / PCN: 2465.00

Catalog #	Size	Dose
#11322	20 ml	10 dose
#11324	100 ml	50 dose

Formalin inactivated Clostridium haemolyticum, aluminum hydroxide adsorbed.

For use in healthy cattle, sheep and goats as an aid in the prevention of “Red Water” Disease (Bacillary Hemoglobinuria).

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously or intramuscularly. Revaccinate every 5 to 6 months where constant exposure is likely.

Spring vaccination is recommended because disease is most prevalent in summer months.

Calves should be vaccinated at 3-4 months of age.

Revaccinate annually using a single dose.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

Contains thimerosal and formalin as preservatives.

ESSENTIAL 2

Clostridium Chauvoei-Septicum Bacterin
Killed Bacterin

VLN: 188 / PCN: 2401.01

Catalog #	Size	Dose
#11364	100 ml	50 dose
#11366	500 ml	250 dose

This product has been shown to be effective for the vaccination of healthy cattle, sheep, and goats against Blackleg due to C. chauvoei and Malignant Edema due to C. septicum. The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

This product was licensed prior to the requirement to establish a minimum age for use.

Safety in pregnant animals is unknown.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously. Calves vaccinated under 3 months of age should be revaccinated at weaning or at 4 - 6 months of age. Historically, annual vaccination is recommended. Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

In case of human exposure, contact a physician.

Contains thimerosal and formalin as preservatives.

FOR VETERINARY USE ONLY

ESSENTIAL 3

Clostridium Perfringens
Types C&D Toxoid
Detoxified Toxin

VLN: 188 / PCN: 8201.00

Catalog #	Size	Dose
#11312	20 ml	10 dose
#11314	100 ml	50 dose
#11315	250 ml	125 dose

This product has been shown to be effective for the vaccination of healthy cattle, sheep and goats against enterotoxemia caused by Clostridium perfringens Types B, C and D, and for the vaccination of healthy swine against Clostridium perfringens Type C. Cl. perfringens Type B is not a significant problem in North America.

This product was licensed prior to the requirement to establish a minimum age for use. The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

Safety in pregnant animals is unknown.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously or intramuscularly. Repeat full dose in 3 to 4 weeks. Historically, annual vaccination is recommended. Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature.

If noted, administer adrenalin or equivalent.

In case of human exposure, contact a physician.

Contains thimerosal and formalin as preservatives.

FOR MORE INFORMATION SEE PAGE 21

FOR VETERINARY USE ONLY

ESSENTIAL 3+T

Clostridium Perfringens Types C&D
Tetanus Toxoid
Detoxified Toxin

VLN: 188 / PCN: 8304.00

Catalog #	Size	Dose
#11302	20 ml	10 dose
#11304	100 ml	50 dose
#11305	250 ml	125 dose

This product has been shown to be effective for the vaccination of healthy cattle, sheep and goats against enterotoxemia caused by Clostridium perfringens Types B, C and D, and for the vaccination of healthy swine against Clostridium perfringens Type C.

This product has also been shown to be effective for the vaccination of healthy cattle, sheep, goats and swine against tetanus.

This product was licensed prior to the requirement to establish a minimum age for use. The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov. Cl. perfringens Type B is not a significant problem in North America.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Safety in pregnant animals is unknown.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously or intramuscularly. Repeat full dose in 3 to 4 weeks. Historically, annual vaccination is recommended. Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

In case of human exposure, contact a physician.

Contains thimerosal and formalin as preservatives.

FOR MORE INFORMATION SEE PAGE 21

LEPTO-5

Leptospira Canicola-Grippotyphosa-
Hardjo-Icterohaemorrhagiae-Pomona Bacterin
Killed Bacterin

VLN: 188 / PCN: 2665.01

Catalog #	Size	Dose
#11852	20 ml	10 dose
#11854	100 ml	50 dose

For use in healthy cattle and swine as an aid in the prevention of Leptospirosis caused by the organisms named.

Product is aluminum hydroxide adsorbed.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Shake well before use.

Use entire contents when first opened.

Do not vaccinate within 21 days before slaughter.

DOSAGE & ADMINISTRATION: Inject 2ml intramuscularly or subcutaneously. For swine, a second dose should be administered 2-4 weeks later. Annual single dose revaccination is recommended for both species.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

Contains thimerosal as a preservative.

MANNHEIMIA HAEMOLYTICA-PASTEURELLA MULTOCIDA BACTERIN

Killed Bacterin

Catalog #	Size	Dose
#11652	20 ml	10 dose
#11654	100 ml	50 dose

This product has been shown to be effective in the vaccination of healthy cattle, sheep and goats against Pasteurellosis caused by Mannheimia haemolytica and Pasteurella multocida.

The duration of immunity is unknown.

For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

Safety in pregnant animals is unknown.

This product was licensed prior to the requirement to establish a minimum age for use.

Chemically killed, aluminum hydroxide adsorbed, cultures of Mannheimia haemolytica, and Pasteurella multocida, Bovine isolates. In case of human exposure, consult a physician.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: Inject 2 ml subcutaneously. Administer two doses, 2 to 4 weeks apart. For advice on revaccination frequency, consult your veterinarian.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature.

If noted, administer adrenalin or equivalent.

Contains thimerosal and formalin as preservatives.

FOR MORE INFORMATION SEE PAGE 22

NORMAL SERUM

Equine Origin

Catalog #	Size	Dose
#13102	100 ml	100 dose
#13103	250 ml	250 dose

For use as an aid in non-specific treatment of equine infections and disease conditions.

Administration provides supplemental equine albumin, globulins and associated fluids.

This product was licensed prior to the requirement to establish a minimum age for use.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Use entire contents when first opened.

Shake well before using.

Do not mix with other products.

Safety in pregnant animals is unknown.

DOSAGE & ADMINISTRATION: Inject subcutaneously, intramuscularly, or intravenously, 50ml to 250ml depending upon weight of animal and judgment of veterinarian administering. Repeat doses may be given.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

The use of equine serum has been associated with serum hepatitis in horses (Theiler's Disease).

If user has questions, consult a veterinarian.

In case of human exposure, consult a physician.

Contains phenol and thimerosal as preservatives.

OVINE ECTHYMA

(Sore Mouth)
Live Virus

VLN: 188 / PCN: 1821.00

Catalog #	Dose
#19305	100 dose

For use on healthy sheep and goats as an aid in the control of “Sore Mouth” disease.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter or within 24 hours of dipping or spraying. It is advisable to vaccinate each new lamb and kid crop. Since exposure to infection can occur during shipping, range lambs moving into feedlots should be vaccinated at least 14 days before shipment to prevent possible rapid spread of the disease after arrival.

Normally only healthy animals should be vaccinated, but experience has shown that vaccination of infected sheep and lambs tends to shorten the course of disease during an outbreak of “Sore Mouth.” Do not use disinfectants to sterilize the syringe, brush/scarifier before and during use.

DOSAGE & ADMINISTRATION: The bottle of vaccine contains 100doses. Select a wool-free area of skin, such as the inside of the flank and scarify the outer layer by scratching with the notched handle of the applicator furnished as a part of the package.

Scratching need not be deep enough to cause bleeding but should be sufficient to adequately roughen the skin. An area of at least one square inch should be scarified. Vaccine can be applied by dipping the brush into the vaccine bottle or by placing a drop of vaccine on the scarified area and brushing vigorously.

Reddening and a slight swelling of the site of administration should be observed a few days after vaccination. This will develop into raised areas that will rupture and scab over representing a “take” that indicates successful vaccination. Scabs will dry and fall off in about 2 to 4 weeks.

PRECAUTIONS: In the event of human exposure consult a physician. Brushes and scarifiers should be used only in a single flock of sheep.

If there is a need to use the instrument a second time it should be sterilized by boiling in water for several minutes. Burn, autoclave or chemically disinfect this container and all unused contents.

Contains penicillin and streptomycin as preservatives.

FOR VETERINARY USE ONLY

SALMONELLA DUBLIN-TYPHIMURIUM BACTERIN

Killed Bacterin

VLN: 188 / PCN: 2821.00

Catalog #	Size	Dose
#11602	20 ml	10 dose
#11604	100 ml	50 dose

This product has been shown to be effective in the vaccination of healthy cattle against infections caused by Salmonella dublin and Salmonella typhimurium.

This product was licensed prior to the requirement to establish a minimum age for use.

The duration of immunity is unknown.

For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

Formalin killed, aluminum hydroxide adsorbed cultures of Salmonella dublin and Salmonella typhimurium, bovine isolates.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use. Use entire contents when first opened. Do not mix with other products. Safety in pregnant animals is unknown.

DOSAGE & ADMINISTRATION: In areas where Salmonella infections have been a problem, cattle should be given two subcutaneous injections of 2 ml each at an interval of 14-21 days.

Vaccination of adult cattle is recommended prior to placing them on feed.

It is recommended that newborn calves be left on cows for 7 days, after which this bacterin can be administered.

Historically, annual vaccination is recommended.

Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

In case of human exposure, contact a physician.

Contains thimerosal and formalin as preservatives.

FOR MORE INFORMATION SEE PAGE 16

FOR VETERINARY USE ONLY

TETANUS ANTITOXIN

Equine Origin

VLN: 188 / PCN: 6302.00

Catalog #	Size	Dose
#13601	1 x 1,500 unit (5 ml)	1 dose
#13603	10 x 1,500 unit (10 x 5 ml)	10 x 1 dose
#13604	1 x 15,000 unit (50 ml)	10 dose

For use as an aid in the prevention and treatment of tetanus in animals.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION: 1500 units administered subcutaneously or intramuscularly is the recommended preventive dose. 5 ml equals 1500 units.

Large doses of Tetanus Antitoxin may provide beneficial response in animals already infected with tetanus, but success of treatment is not assured. For treatment, administer 10,000 to 50,000 units to horses and cattle, 3000 to 15,000 units to sheep and swine.

Animals suffering slow healing puncture wounds or deep abrasions should be given a second dose of antitoxin in 7 days and additionally as considered necessary. Consult a veterinarian for vaccination program.

Vaccination with tetanus toxoid is recommend for healthy domestic animals not infected with tetanus to establish an active immunity for prevention against disease.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

The use of equine serum has been associated with hepatitis (Theiler's Disease). If user has questions, consult a veterinarian.

In case of human exposure, consult a physician.

Contains phenol and thimerosal as preservatives.

FOR MORE INFORMATION SEE PAGE 21 + 24

FOR VETERINARY USE ONLY

TETANUS TOXOID

Concentrated, Adjuvanted
Detoxified Toxin

VLN: 188 / PCN: 8601.00

Catalog #	Size	Dose
#11411	10 x 1 ml	1 dose
#11415	10 ml	10 dose

This product has been shown to be effective for the vaccination of healthy horses, cattle, sheep, goats, and swine against tetanus. This product was licensed prior to the requirement to establish a minimum age for use. The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter. Safety in pregnant animals is unknown. Do not mix with other products. Shake well before use. Use entire contents when first opened.

DOSAGE & ADMINISTRATION: For primary immunization, two doses should be administered subcutaneously or intramuscularly approximately 30 days apart.

Use intramuscularly for horses as local reactions are more likely to occur if injected subcutaneously.

Horses, cattle: 1 ml dose
Sheep, goats, swine: 0.5 ml dose

Historically, annual single-dose revaccination has been recommended.

Contact veterinarian for advice.

PRECAUTIONS: A transitory local reaction may occur at injection site.

Anaphylactoid reaction may occur following administration of products of this nature.

If noted, administer adrenalin or equivalent.

In case of human exposure, consult a physician.

Contains thimerosal and formalin as preservatives.

FOR MORE INFORMATION SEE PAGE 21

FOR VETERINARY USE ONLY

TETANUS TOXOID

Unconcentrated, Adjuvanted
Detoxified Toxin

VLN: 188 / PCN: 8601.00

Catalog #	Size	Dose
#11401	10 ml	1 dose
#11405	50 ml	5 dose

This product has been shown to be effective for the vaccination of healthy horses, cattle, sheep, goats and swine against tetanus. This product was licensed prior to the requirement to establish a minimum age for use. The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Do not mix with other products.

Shake well before use.

Use entire contents when first opened.

Safety in pregnant animals is unknown.

DOSAGE & ADMINISTRATION: For primary immunization, two doses should be administered subcutaneously or intramuscularly approximately 30 days apart.

Use intramuscularly for horses as local reactions are more likely to occur if injected subcutaneously.

Horses, cattle: 10 ml dose
Sheep, goats, swine: 1 ml dose per 100 lb.

Revaccinate after approx. 30 days

Historically, annual single dose revaccination has been recommended.

Contact veterinarian for advice.

PRECAUTIONS: A transitory local reaction may occur at injection site. Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent. In case of human exposure, consult a physician.

In case of human exposure, contact a physician.

Contains thimerosal and formalin as preservatives.

FOR VETERINARY USE ONLY

WART VACCINE

Killed Virus

VLN: 188 / PCN: 1985.50

Catalog #	Size
#11702	50 ml
#11703	90 ml

This product has been shown to be effective for the vaccination of healthy cattle against viral warts (Papillomas).

This product was licensed prior to the requirement to establish a minimum age for use. The duration of immunity is unknown. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

Tested for purity and safety.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 21 days before slaughter.

Safety in pregnant animals is unknown.

Shake well before use.

Use entire contents when first opened.

Do not mix with other products.

DOSAGE & ADMINISTRATION:
Calf Dose: 10ml. Inject 5 ml subcutaneously in 2 separate sites along the side of the neck.
Cattle Dose: 15 ml. Inject 7.5 ml subcutaneously in 2 separate sites along the side of the neck.

Repeat at 3 to 5 weeks. Historically, annual vaccination is recommended.

Contact veterinarian for advice.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

In case of human exposure, contact a physician.

Contains thimerosal and formalin as preservatives.

SCAN QR CODE FOR INFORMATION ABOUT BUYING AND SELLING WARTS.

FOR VETERINARY USE ONLY

CATTLE RESPIRATORY VACCINES

Colorado Serum Company can provide, on *special order*, *the following modified-live virus vaccines below as well as other custom combinations.*

For more information, please contact us at colorado-serum@colorado-serum.com

PRE-BREED 8

IBR-BVD-PI_3-LEPTO 5

Modified Live Virus/Killed Bacterin

VLN: 188 / PCN: 4439.00

Catalog #	Size	Dose
#19552	20 ml	10 dose
#19554	100 ml	50 dose

For use in healthy cattle and calves as an aid in the prevention of disease caused by Bovine Rhinotracheitis virus, Bovine Virus Diarrhea virus (BVDV), $Parainfluenza_3$ virus, and leptospirosis caused by themicro-organisms named. The vaccine contains BVDV Type 1, with protection demonstrated against BVDV Type 1 challenge.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Rehydrate with accompanying vial of Leptospira Bacterin, supplied as a component part of this package.

Shake well after rehydration.

Use entire contents when first opened.

Do not administer to pregnant cows or calves nursing pregnant cows.

Do not administer to calves less than 4 weeks of age.

Do not vaccinate within 21 days before slaughter.

DOSAGE & ADMINISTRATION: Inject 2ml of the combined product intramuscularly (preferably in the neck region).

If necessary to vaccinate young calves, revaccinate these animals at 6 months of age.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

Burn, autoclave, or chemically disinfect this container and all unused contents.

Contains thimerosal, penicillin, and streptomycin as preservatives.

FOR VETERINARY USE ONLY

RESPIRA-3

IBR-BVD-PI_3

Bovine Rhinotracheitis-Virus Diarrhea-$Parainfluenza_3$ Vaccine

Modified Live Virus

VLN: 188 / PCN: 1171.00

Catalog #	Size	Dose
#19452	20 ml	10 dose
#19454	100 ml	50 dose

For use in healthy cattle and calves as an aid in the prevention of disease caused by Bovine Rhinotracheitis virus, Bovine Virus Diarrhea virus (BVDV) and $Parainfluenza_3$ virus. The vaccine contains BVDV Type 1, with protection demonstrated against BVDV Type 1 challenge.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Do not vaccinate within 42 days before slaughter.

Shake well before use.

Do not mix with other products.

Use entire contents when first opened.

Do not use disinfectants to sterilize equipment.

Safety in pregnant animals is unknown.

DOSAGE & ADMINISTRATION: Inject 2ml of the combined product intramuscularly (preferably in the neck region).

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

Burn, autoclave, or chemically disinfect this container and all unused contents.

Contains penicillin and streptomycin as preservatives.

FOR VETERINARY USE ONLY

BRUCELLA ABORTUS VACCINE STRAIN RB-51

Live Culture

VLN: 188 / PCN: 1261.00

Catalog #	Size	Dose
#62512	10 ml	5 dose
#62513	50 ml	25 dose

For use in healthy female cattle 4 to 12 months of age as an aid in the prevention of infection and abortion caused by Brucella abortus.

For use by or under the supervision of a veterinarian. Distribution in the United States shall be limited to authorized recipients designated by proper state officials under such additional conditions as these authorities may require.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Rehydrate with accompanying vial of sterile diluent.

Diluent is a buffered solution specifically prepared for use with this vaccine. Shake well after rehydration.

Use entire contents when first opened.

Do not vaccinate within 3 weeks before slaughter.

Do not administer to pregnant cows.

DOSAGE & ADMINISTRATION: Inject 2ml subcutaneously.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

In the event of accidental human exposure, consult a physician. WARNING – this organism is Rifampin and Penicillin resistant.

Burn, autoclave, or chemically disinfect container and all unused contents.

PULMO-CLEAR

Caprine Serum Fraction, Immunomodulator

VLN: 188 / PCN: 9360.00

Catalog #	Size	Dose
#63321	10 x 2 ml	10 x 1 dose

For use as an aid in the treatment of horses with Lower Respiratory Disease. To be used in combination with adjunctive therapy.

NOTE: The complex nature of Lower Respiratory Disease makes treatment difficult for veterinarians who commonly prescribe antibiotics, anti-inflammatory drugs, bronchodilators, and expectorants. Cases often improve during treatment, but conditions can rapidly reoccur when treatment is stopped – extending recovery time and delaying a return to full health.

To address chronic and reoccurring cases of Lower Respiratory Disease, Pulmo-Clear works to modulate the immune system – allowing the horse improved recovery from the clinical conditions associated with ELRD.

CONTRAINDICATION: Corticosteroids and other drugs which may cause immunosuppression are not recommended for use with this product.

STORAGE: Store at 2-8°C. DO NOT FREEZE.

DIRECTIONS: Use entire contents when first opened.

Do not vaccinate within 21 days before slaughter.

DOSAGE & ADMINISTRATION: Inject one 2 ml dose deep intramuscularly in the neck. Repeat this dose in 7-10 days in the opposite side of the neck. Moderate exercise aids in preventing or reducing local reaction. Discontinue use if a severe local reaction occurs.

Proper diagnosis, selection of treatment modalities, and follow-up examinations for Lower Respiratory Disease in equines require veterinary expertise. Therefore, it is recommended that Pulmo-Clear be used by or under the supervision of a veterinarian.

PRECAUTIONS: Anaphylactoid reaction may occur following administration of products of this nature. If noted, administer adrenalin or equivalent.

In the event of accidental human exposure, consult a physician.

Contains phenol and thimerosal as preservatives.

POLICIES AND TERMS OF SALE

- Prepaid ground shipping rates on orders of $500 or more
- Orders less than $500 will be assessed shipping costs
- Current shipping rates will be assessed on customer requested expedited orders of one, two, or three-day service
- Orders requiring in excess of four concurrent working days will be shipped via 3-day service at customer expense unless customer advises otherwise
- Payment terms are Net 30 days from invoice date
- Upon receipt of the shipment, verify product count. If your shipment is damaged or missing product, please report the issue to Colorado Serum Company within 10 days of receipt of the shipment. No adjustments will be made if this time frame is not met.

RETURN POLICY

- Expired product will be considered for return and credit at 75% of original purchase price. Some purchases and products may be sold on a non-returnable basis
- Request for return/credit authorization of eligible products must be in writing within 90 days after expiration date printed on product
- Return/Credit request must include:
  - **Product number & size**
  - **Serial number & expiration date**
  - **Quantity to be returned**
  - **Date of purchase and invoice number, if available**
- Products must be returned through original purchaser
- Credit will be issued at lower of purchase or current price and must be applied ONLY to future purchases within one year

We accept VISA, MASTERCARD, and AMEX for payment at time of shipment

SALMONELLOSIS

IN CATTLE

COLORADO VETERINARY PRODUCTS

THE PEAK OF QUALITY
SINCE 1923

303-295-7527
www.colorado-serum.com

INTRODUCTION

Salmonellosis is a disease that has serious economic effects within the cattle industry. It is most common amongst dairy calves one to ten weeks of age, but can also be seen in adult dairy cows and beef cattle. There are over 2,200 different species of Salmonella recognized worldwide. In the United States, *S. typhimurium*, *S. dublin*, and *S. newport* are the most common species isolated from infected cattle.

Fecal contamination of feed and water from shedding cattle to naïve cattle is the most common source of infection. Contaminated milk, contaminated processed feeds, and improperly cleaned calf-feeding equipment can also serve as sources of infection. Once oral infection occurs, the Salmonella bacteria colonize and multiply in the intestine, resulting in acute enteritis (scours). Typical clinical signs of acute Salmonella enteritis include fever, severe watery diarrhea, straining, and dehydration. A putrid odor, mucus, and blood may be associated with the diarrhea. Salmonellae produce several toxins that may contribute to gut damage and diarrhea. If sufficient damage occurs to the intestinal lining, the bacteria may enter the bloodstream and could spread to the brain, lungs, joints, uterus, and other organs. Mortality rates of up to 60% have been reported in calves with acute salmonellosis.

Cattle may become chronically infected, serving as carriers within a herd and intermittently shedding the organism into the environment. It has been reported that one carrier cow can shed up to one billion Salmonellae a day in the feces.

Salmonella infection in adult dairy cows may result in decreased milk production, watery diarrhea, and abortion. Once an outbreak occurs on a particular farm, the disease typically becomes endemic with periodic outbreaks noted. Although not as common in beef cattle, all of the aforementioned clinical signs can be noted within a beef herd.

Salmonellosis is also a significant public health concern. Humans can become infected from the consumption of contaminated drinking water, raw diary, and milk products, as well as undercooked meat products.

CONTROL AND PREVENTION

Early treatment of bovine salmonellosis is critical. Once Salmonellae infiltrate the intestinal lining, they typically are engulfed by certain white blood cells and may survive phagocytosis. These surviving intracellular bacteria can then multiply and spread, and are sheltered from the body's immune system. Fluids and other supportive therapy are essential, as well as broad-spectrum antibiotics when septicemia develops. The use of antibiotics for Salmonella enteritis is controversial as the population of normal intestinal bacterial microflora may be altered as well as the possible development of antibiotic resistance by Salmonella organisms.

Emphasis should be placed on disease prevention, as most cattle respond poorly to treatment for salmonellosis. Prevention should involve two avenues:

DECREASING EXPOSURE

- Strict adherence to quarantining new incoming stock, cleanliness in the calving area and avoidance of overcrowding will greatly reduce the number of Salmonella organisms to which cattle are exposed.
- Special attention should be paid to properly disinfecting calf-feeding equipment between feedings.
- Fecal contamination of feed and water supplies should be prevented.
- Cattle that develop Salmonella infection should be segregated from the rest of the herd, with strict hygiene practiced by farm personnel to prevent further spread.
- Carrier animals should be identified and either culled or isolated from the remainder of the herd.

INCREASING RESISTANCE

- Vaccinate pregnant cows in late gestation with a Salmonella bacterin. When pregnant cows are vaccinated in late gestation with a Salmonella bacterin, they will respond by increasing the level of antibody to Salmonella in their colostrum. The extra antibodies to Salmonella that the young calf receives in this colostrum will increase the calf's resistance to the disease.

  Salmonella bacterins are also helpful when salmonellosis is a problem in adult dairy and beef cows.

- Supplement the antibodies that the calf receives in the colostrum by administering an antibody solution containing additional antibodies to Salmonella. Bovi-Sera Serum Antibodies contains antibodies to Salmonella and will supplement the protection the calf received when it consumed colostrum from the cow early in life. In addition, Bovi-Sera Serum Antibodies can also be administered later in the life of the calf, when maternal antibodies are decreasing and the calf's own immune system is not yet fully developed.

  Although Salmonella infection is difficult to treat, supplemental antibodies for a particular Salmonella infection may be helpful.

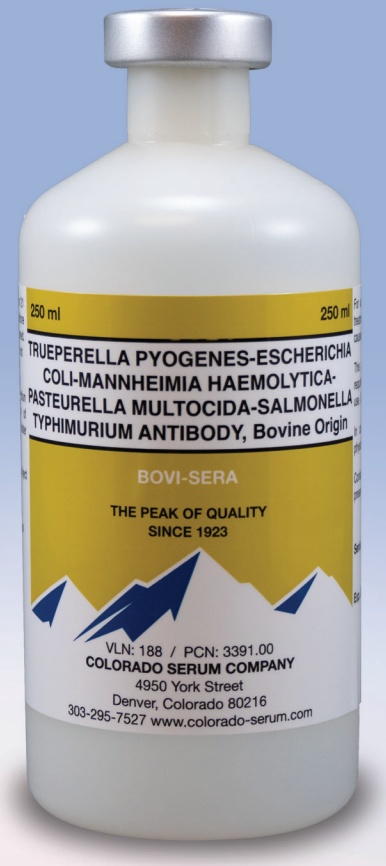
It is recommended that producers consult with a veterinarian before instituting a treatment, prevention, or control program.

Colorado Serum Company proudly manufactures Salmonella Dublin-Typhimurium Bacterin and Bovi-Sera Serum Antibodies to assist producers and veterinarians with Salmonella control and prevention in cattle. Contact your local distributor or veterinarian for these and other quality products from Colorado Serum Company.

BOVI-SERA

SERUM ANTIBODY
FOR CALVES, CATTLE AND SHEEP

BOVI-SERA is a serum antibody product produced and distributed by Colorado Serum Company for use against a variety of livestock diseases. BOVI-SERA is prepared from the blood of cattle hyperimmunized with *Trueperella pyogenes*, *Escherichia coli* (including K-99), *Mannheimia haemolytica* Types 1 and 2, *Pasteurella multocida* Type A and *Salmonella typhimurium*. Due to the hyperimmunization procedures, the serum recovered at the end of processing contains high levels of antibodies directed at the aforementioned organisms. The antibodies contained within BOVI-SERA aid in the treatment and prevention of these mentioned bacterial diseases.



Also available in 20 and 1,000 ml sizes

COLORADO VETERINARY PRODUCTS

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BACTERIAL DISEASES INFORMATION

The bacteria for which BOVI-SERA is developed may cause a wide variety of diseases in calves, cattle and sheep:

ORGANISM	SPECIES	DISEASE
Trueperella pyogenes	Cattle Sheep	- Abscesses in lungs, udder and joints - Chronic purulent pneumonia and joint infections
Mannheimia haemolytica Types 1 and 2	Cattle Sheep	- Major component of bovine respiratory disease complex and septicemia - Pneumonia and septicemia
Pasteurella multocida Type A	Cattle Sheep	- Pneumonia and hemorrhagic septicemia - Pneumonia and hemorrhagic septicemia
Escherichia coli Including K-99	Cattle Sheep	- Enteric infections, mastitis and septicemia - Enteric infections and septicemia
Salmonella typhimurium	Cattle Sheep	- Enteric infections, abortions, mastitis and septicemia - Abortions

WHEN TO ADMINISTER

BOVI-SERA can be administered to calves, cattle and sheep at any age to prevent or treat any of the bacterial diseases previously listed.

As a preventative, BOVI-SERA should be administered immediately prior to a suspected disease outbreak. The prevention provided by BOVI-SERA will last approximately 7 to 21 days, depending on the species of animal in which BOVI-SERA is injected and the level of bacterial disease exposure. As prevention wanes, due to time, BOVI-SERA can be re-administered to increase the measure of prevention.

As a treatment, BOVI-SERA can be administered to aid in the treatment of bacterial diseases previously listed. Treatment with BOVI-SERA can be repeated as needed and can be used in conjunction with other treatments, i.e. antibiotics. BOVI-SERA does not interfere with or leave a residue in lactating animals. BOVI-SERA may be used on pregnant animals.

BOVI-SERA WILL AID IN

TREATMENT OF SCOURS:

Many times *E. coli* or *S. typhimurium* infections start out as scours, but due to damage to the enteric lining, the bacteria can leave the GI tract and infect other parts of the body. A serum antibody can assist the body in battling this infection.

TREATMENT OF PNEUMONIA:

Pneumonia secondary to *M. haemolytica* and *P. multocida* can be sometimes difficult to overcome with antibiotics alone and the use of a serum antibody could be the difference between treatment success and failure.

PREVENTION OF SHIPPING FEVER:

Treatment with BOVI-SERA prior to shipping will increase the level of antibodies to *M. haemolytica* and *P. multocida*, two bacteria commonly associated with shipping fever.

MORE ON SERUM ANTIBODIES

High levels of serum antibodies can be used to treat various conditions. Newborn calves and lambs which did not receive adequate amounts of colostrum, or poor quality colostrum, are deficient in antibodies, specifically IgG. If this problem is not detected until after the first 24 hours of life, supplying the newborn with additional colostrum will not be beneficial. To illustrate the occurrence of this situation, the USDA conducted a survey of dairy operations and measured the IgG levels of 1 to 3 day old calves. Surprisingly, over 40% of these dairy calves had IgG levels less than 1,000 mg/dl (levels less than 1,000 mg/dl have been associated with increased disease incidence).

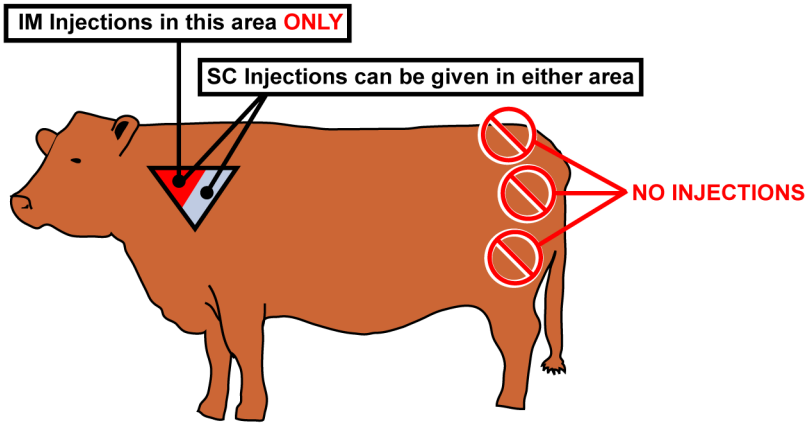
To combat this situation, plasma or serum high in antibodies can be administered systemically to booster the newborn's level of antibodies (IgG).

For specific management recommendations, it is suggested that producers consult with a veterinarian before instituting a prevention or control program.

CORRECT ADMINISTRATION

1. RESTRAIN THE ANIMAL
Be sure the animal can't jump or move excessively.

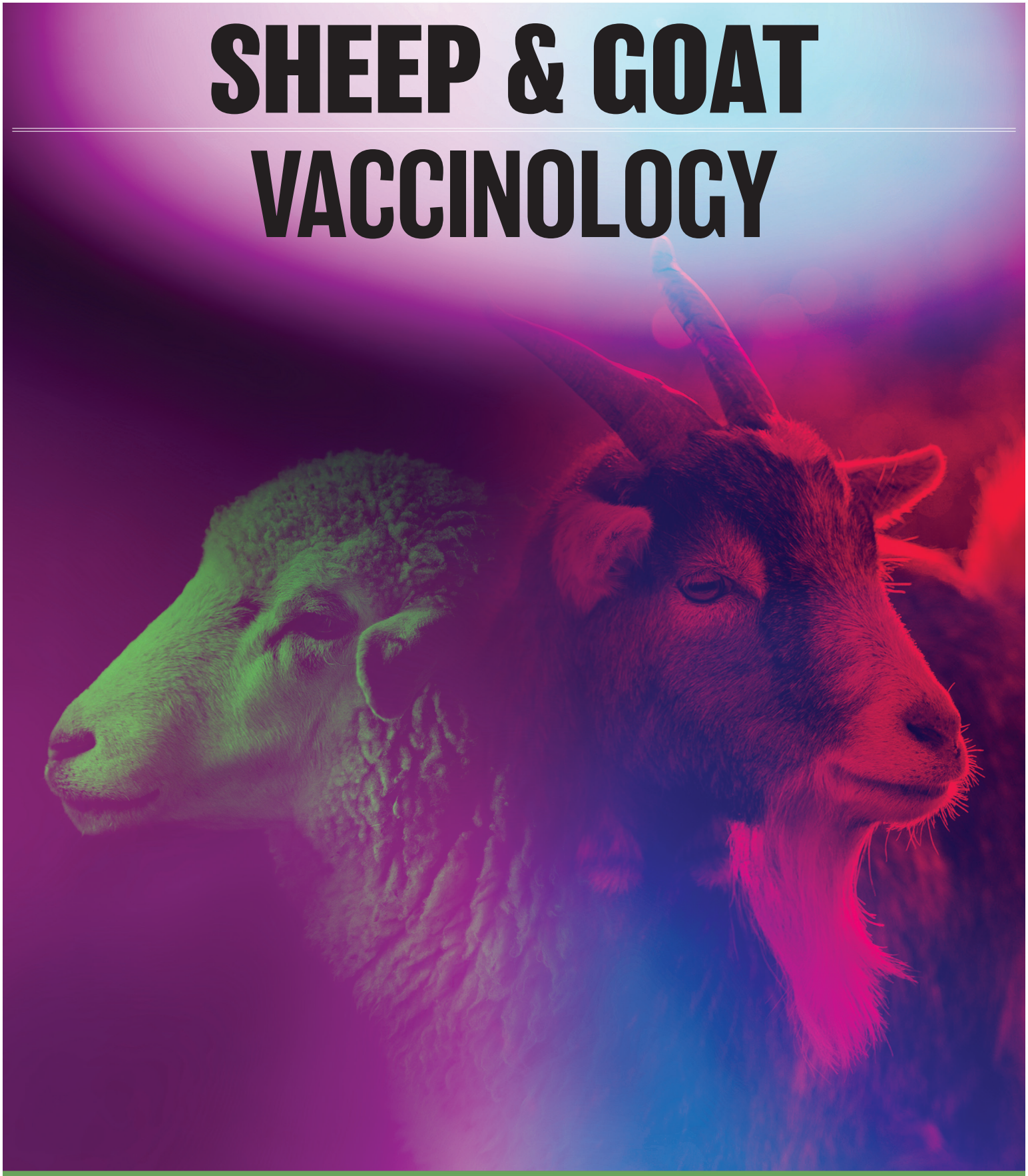
2. SELECT THE BEST INJECTION SITE
Subcutaneous (SC) injections are the preferred method, but intramuscular (IM) injections can also be used. SC injections should be made along the side of the neck or behind a foreleg using the tented technique (grabbing a loose fold of skin between the thumb and forefinger and slipping a needle under the fold). IM injections should be made in the side of the neck. Multiple sites should be used for large dosages.



3. USE THE RIGHT-SIZED NEEDLE
A 16 to 18 gauge, 1/2" to 3/4" needle is preferred for SC injections. A 16 to 18 gauge, 1 1/2" needle is ideal for IM injections in the neck. A 16 to 18 gauge, 1" needle is best for IM injections in a light weight animal.

4. SELECT THE PROPER INJECTION TECHNIQUE
After drawing the product into the syringe first check for an air bubble in the syringe or needle and eliminate if present. After inserting the needle into the animal, pull back on the syringe to be sure that there is no blood present. Then empty the syringe and wait a second before withdrawing the needle.

SHEEP & GOAT VACCINOLOGY



Randall J. Berrier, DVM
Senior Vice President - Scientific Affairs
Colorado Serum Company

A key component to a healthy sheep flock or goat herd is vaccination. Small ruminants need to be vaccinated to prevent several different diseases. Geographic location will dictate which vaccines are necessary based on higher risk endemic areas for certain diseases. Regardless of geography, however, all sheep and goats should receive vaccinations for *Clostridium perfringens* types C and D, and tetanus (caused by *Clostridium tetani*). These vaccines are considered core vaccines for all sheep and goats.

When lambs and kids are born, they have a totally naïve and immature immune system. There is no trans-placental immunity passed on to the developing fetus from the ewe or nanny. The immunity that the newborns have to protect them from disease during their first weeks of life comes from the "first milk" (also called colostrum) that they get from the ewe or nanny. The lamb and kid are able to absorb the high levels of antibodies that are passed through the colostrum for only the first 12 – 24 hours after they are born. After this time the newborn gut is unable to absorb the large antibody molecules. This type of immunity is called "passive immunity", because it is immunity being transferred from a donor sheep or goat (ewe or nanny) to the recipient (lamb or kid). These antibodies will help to protect the lamb/kid from infectious diseases during the early weeks of their life, while their own immune system is maturing.

In an ideal situation, the adult ewe/nanny will be currently vaccinated when they are bred and then given their annual *perfringens* C, D and Tetanus (CD-T) boosters twenty to thirty days prior to lambing or kidding. In this scenario the lambs and kids should be protected with the colostrum-derived antibodies for 6 – 8 weeks, then vaccinate the lambs/kids with their first CD-T toxoid at 6 weeks of age and give booster CD-T vaccinations at 10 and 14 weeks of age. Annual CD-T boosters are required thereafter. Some of the literature says that goats do not respond as well as sheep to the type D toxoid. For this reason, it may be beneficial to booster adult goats with C & D toxoid twice a year instead of once. The trade name for Colorado Serum's C & D toxoid is **ESSENTIAL 3**. The trade name for Colorado Serum's CD-Tet is **ESSENTIAL 3+T**.

If your lambs or kids are born from mothers that have never been vaccinated with CD-T or have an unknown vaccine history, assume that mom is not vaccinated. In this case go ahead and vaccinate the lambs/kids at 2 weeks of age and give boosters again at 6, 10 and 14 weeks of age with annual or bi-annual boosters thereafter. Also, in this scenario (lambs/kids born from unvaccinated ewes/nannies) it would be good insurance to give **CLOSTRIDIUM PERFRINGENS TYPES C & D ANTITOXIN** in the first few days of life.

Clostridium perfringens type C enterotoxemia is mostly a problem in young lambs and kids in the first two weeks of life and is caused by ingestion of feces from contamination on teats, or equipment and other contaminated objects in their environment. Type D enterotoxemia is the classic "over-eating" disease and this occurs mostly in animals older than 3 weeks of age. Type D is caused by an overgrowth of *Clostridium perfringens* bacteria in the gut releasing excess D toxin secondary to grain overload or eating lush pasture that contains a large amount of highly fermentable starch. Young lambs and kids that are suckling on ewes and nannies grazing on lush pasture can even develop type D enterotoxemia. Giving C & D Antitoxin to young animals at high risk can help protect them from enterotoxemia for 10 – 14 days. C & D Antitoxin is horse serum containing high levels of antibodies to C & D so it is also a form of passive immunization since you are taking antibodies from a donor animal, in this case a horse, and transferring them to a recipient – a sheep or goat, and instead of a colostrum source it is a blood (serum) source, and is given through an injection.

Tetanus is a toxin produced by another Clostridial bacteria called *Clostridium tetani*. Infections from this organism occur not from ingestion or gut overgrowth, but from wounds contaminated with dirt or manure that contains the bacteria. The vaccination protocol for tetanus is the same as it is for perfringens C & D, and it is included in a multivalent vaccine (toxoid) called CD&T or **ESSENTIAL 3 + T**, as well as by itself as just plain **TETANUS TOXOID**. Because tetanus is always secondary to a wound, it is of great concern when dehorning, tail docking and castrating (especially banding). Giving **TETANUS ANTITOXIN** (TAT) to lambs and goats during castration, tail docking and dehorning is a good insurance policy, no matter what age it is done, unless the procedure isn't done until after the lamb or kid has been vaccinated three times with CD-T in the first 14 weeks of life, in which case it is probably not necessary. In lieu of rolling or intermittent backorders with TAT it is best to booster the dams with CD&T toxoid 3 to 4 weeks prior to lambing or kidding, as mentioned earlier. This greatly reduces or negates the need for TAT when tail docking, disbudding or castrating during the first 2 weeks of age as long as the lamb or goat got adequate colostrum in the first 12 hours of life.

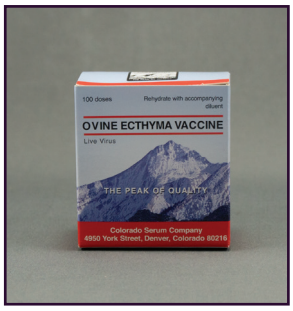
Rabies is a concern in most of the country from different reservoirs (i.e., skunks, raccoons, fox, coyote, etc.). It is recommended that sheep and goats be vaccinated for rabies. **DEFENSOR 3** (by Zoetis) and **IMRAB 3** and **IMRAB LA** (Merial) are all labeled for use in sheep and cattle so these should be o.k. to use in goats, however I would recommend calling the manufacturer and your veterinarian to get any information they may have on the use of these products in goats since it is considered "off-label" use.

For breeding sheep and goats Chlamydia (*Chlamydia abortus*) can be a concern in causing abortions. If this disease has been diagnosed in abortions on your farm or in nearby farms you can vaccinate your sheep and/or goats with the **CHLAMYDIA ABORTUS BACTERIN** that Colorado Serum makes. The vaccine is labeled for sheep, but even though it is not labeled for goats it is commonly used off-label in goats. Empirically, it does appear to be efficacious to some degree in goats and is safe since it is an inactivated Bacterin. It does contain an oil-based adjuvant so there is a transient lump that commonly occurs after vaccination. Vaccinate 60 and 30 days prior to breeding in naïve females and then booster once yearly thereafter just prior to breeding. Another genus of bacteria that causes late-term abortions, mostly in sheep (rarely in goats), is *Campylobacter* (formally *Vibrio*) *fetus* and *jejuni*. Colorado Serum has a licensed vaccine called **CAMPYLOBACTER FETUS-JEJUNI BACTERIN** for sheep. This vaccine is given to naïve ewes just prior to breeding with a second vaccination at mid-gestation (60 - 75 days later), with annual boosters at mid-gestation thereafter. Unfortunately the *jejuni* strain in this vaccine does not cross protect against the newer (mutated ?) tetracycline-resistant strain of *Campylobacter jejuni*. That is why it is best to get your abortions diagnosed and typed at a veterinary diagnostic lab to determine what organism you are dealing with. Hygieia has had a Campylobacter Fetus-Jejuni vaccine available from time to time with the tetracycline-resistant *jejuni* strain, or you can have an autogenous Campylobacter Jejuni vaccine made by Colorado Serum or another USDA-licensed autogenous laboratory.

Thick, cheesy abscesses in sheep and goats are commonly caused by the bacteria *Corynebacterium pseudotuberculosis* and the disease is called Caseous Lymphadenitis (CL). There is no licensed vaccine for CL disease labeled for goats. Colorado Serum has a fully licensed whole cell Bacterin/Toxoid (**CASE-BAC**) labeled for sheep only. It has been reported that Casebac can cause exaggerated injection site reactions in some goats, as well as anorexia and lethargy. There are a lot of goat producers that use this vaccine in goats and report minimal or no adverse reactions, but using the vaccine is off-label in goats and you do so at your own risk. Label instructions are two initial injections, four weeks apart, followed by annual boosters. Do not vaccinate under eight weeks of age and do not vaccinate pregnant animals or animals that have, or have had, the disease. Colorado Serum Company has been working for years to develop a fully licensed CL vaccine for goats and this is still in the pipeline.

For premises with a history of pneumonia in their sheep or goats **MANNHEIMIA HAEMOLYTICA-PASTEURELLA MULTOCIDA BACTERIN** (MHPM) may be indicated. This is especially true if you are taking animals to shows and fairs and putting them through the stresses associated with these activities. You can vaccinate lambs or goats with MHPM at 60 and 90 days of age followed by boosters every six months as needed, since the duration of immunity appears to wane after six months. Pregnant animals can be boosted three weeks prior to lambing or kidding to establish good colostral passive transfer to the newborns after birth.

Sore mouth is caused by a parapox virus and can cause scabs on the lips, nose, teats and occasionally other mucosal areas of sheep and goats. Colorado Serum's **OVINE ECTHYMA VACCINE** is labeled for sheep and goats, but it is made from a sheep origin virus that has shown some efficacy in goats. The ecthyma vaccine is applied in the hairless area of the upper-inner thigh or ear after scarifying the skin. An applicator brush is provided with a scarifier on the other end that is used to make a quarter-sized scratched lesion. A drop or two of the vaccine is then brushed into the scratched (scarified) lesion. The establishment of a scab at this location within a few days is proof that you have a successful vaccination. There is not maternal passive immunity with this disease or from vaccination so vaccinating ewes and nannies will not benefit newborn lambs and kids. Therefore the lambs/kids will need to be vaccinated as well and can be vaccinated as early as the first week of age. Only vaccinate animals that do not currently have sore mouth. You also do not need to vaccinate animals that have been vaccinated or have had the disease within the previous two years because immunity lasts for 2 or 3 years. Separate the infected from non-infected animals and vaccinate only the non-infected. Also, use care and wear gloves when using this vaccine or handling animals with the disease as this virus and vaccine strain can be transmitted to people – creating sores and scabs in any cuts or abrasions that you may have on your hands.



Other vaccines that might be considered less frequently and will be dictated by your area risk would be vaccines for other Clostridial organisms (e.g. – blackleg, black disease, etc.), foot rot, anthrax and leptospirosis. Call your veterinarian and the vaccine manufacturer for guidance before using these products since some would be off-label (Lepto vaccines) or imported (foot rot vaccine). Anthrax Spore vaccine is indicated for sheep and goats in endemic regions for anthrax (SW Texas, North and South Dakota). Colorado Serum Company does produce other Clostridial vaccines, **ANTHRAX SPORE VACCINE** and a 5-way Leptospira vaccine.

Finally, for slow or poor-doing newborn lambs and kids, you can provide additional antibodies to combat a lot of common respiratory and GI disease-causing bacterial organisms like *Salmonella*, *E. coli* and *Pasteurella*/*Mannheimia* by using **BOVI-SERA** – which is bovine serum origin antibodies. The preventative dose is 10 - 15 ml injected subcutaneously or 20 – 40 ml for adjunctive treatment in the case of sick sheep or goats. This product is labeled for cattle and sheep but has been used extensively in goats with empirical reports of significant benefit in these slow, poor-doing young kids.

TETANUS

IN
DOMESTIC FARM ANIMALS

COLORADO VETERINARY PRODUCTS

THE PEAK OF QUALITY
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INTRODUCTION

Tetanus is a common disease among domestic farm animals around the world. Without prevention or treatment, the disease is almost always fatal. Horses are most susceptible, while cattle, sheep, goats, and pigs are less susceptible.

The organism that causes the disease, *Clostridium tetani*, requires an anaerobic (no oxygen) environment in which to grow. Animals are at greatest risk of infection when the bacteria enters the body through a deep penetrating wound, an umbilical or post-birthing uterine infection, a severe skin laceration, or a post-castration/post-tail docking procedure (especially associated with banding).

Once the organism has entered the body, it releases an exotoxin that binds to certain nerve fibers and results in muscle rigidity. Clinical signs noted secondary to the muscle rigidity include a "sawhorse appearance," a fixed stare, erect ears, a reluctance to eat or drink due to a "locked jaw," an elevated tail, flared nostrils, and a protruding third eyelid. Even with treatment at this point, death is usually imminent.

CONTROL AND PREVENTION

ACTIVE IMMUNIZATION

The best method of dealing with tetanus is with an active immunization program. An active immunization program involves vaccinating an animal with Tetanus Toxoid (inactivated tetanus toxin) and repeating this immunization in about 14 to 28 days. Complete protection will be achieved in about 7 to 14 days after the second injection – lasting about one year.

With active immunization, the body recognizes the inactivated toxin in the vaccine and causes certain white blood cells to form antibodies in response. The immune system will "remember" that particular vaccine and will be ready to respond quickly the next time it "sees" the toxin again. Once this type of immunity has been established in an animal, a booster injection of Tetanus Toxoid will quickly re-establish protective immunity if it is exposed to this disease.

This type of immunization program results in the best immunity versus the disease, is long lasting, and can be used to increase the amount of antibodies passed from the dam to her offspring for protection. On the other hand, active immunization is not immediate and is not achieved until a short period of time after the second injection.

Tetanus Toxoid is intended to be used to induce immunity in naïve healthy animals or boost immunity in previously vaccinated animals. A Tetanus Toxoid booster (along with antibiotics) is all that is necessary in wounded animals that are current with their Tetanus Toxoid vaccination (received within the previous 12 months).

PASSIVE IMMUNIZATION

An alternative to active immunization is passive immunization. This involves administering antitoxin, which contains antibodies to the tetanus toxin. This antitoxin is derived from the blood of horses that have been actively vaccinated with tetanus solutions and is processed to contain high levels of antibodies. Administration of Tetanus Antitoxin to a susceptible animal results in immediate, short-term protection. This protection lasts about 7 to 14 days, depending upon the degree of disease exposure and the species of animal in which it is used.

Passive immunization protection is recommended if the animal is exposed to the disease or will be shortly, if the animal's vaccination history is unknown, or if the animal has not been previously vaccinated with Tetanus Toxoid. Situations in which immediate, short-term protection is required include deep penetrating wounds in an unvaccinated animal, tail-docking and castration of newborn or young animals, and umbilical infections. These situations would not allow enough time for active immunization to be established prior to disease occurrence. Since the product is derived from horse blood, a small percentage of animals may experience an allergic reaction post-administration.

Tetanus Antitoxin is meant to be used (along with antibiotics) for immediate passive immunity in non-immunized animals that are at risk of contracting tetanus from a wound, or in wounded animals that are overdue (> 12 months) for their Tetanus Toxoid booster. Tetanus Antitoxin is also indicated (in much higher doses – see label) in cases where animals are currently suffering from tetanus disease caused by *Clostridium tetani*. In these cases, a veterinarian should be attending to the animal and administering adjunctive treatments in addition to Tetanus Antitoxin.

It is recommended that producers consult with a veterinarian before instituting a prevention and control program.

Colorado Serum Company manufactures and distributes both forms of tetanus protection for livestock owners. Contact your local distributor or veterinarian and request these and other quality products from Colorado Serum Company.

COLORADO VETERINARY PRODUCTS

Colorado Serum Company got its start in the early 1900's when Hog Cholera disease was decimating the swine industry in the United States.

Dr. J.N. Huff, a graduate of the Kansas City Veterinary College, moved to Denver, CO in 1922 to open a satellite manufacturing plant to the original "American Serum Company" founded in Sioux City, IA. Denver's high altitude provided hogs with added and enriched blood, so Colorado was considered an ideal environment for producing a new antiserum for Hog Cholera. In 1923, the small Denver plant began production and shortly thereafter separated from American Serum to become Colorado Serum Company. Hog Cholera was eventually eradicated from the United States.

Colorado Serum Company went on to expand its product lines to include a full range of large animal biologicals, large animal veterinary instruments, veterinary diagnostics, specialty products, and laboratory reagents. The facilities now cover 22 acres in Denver and contains all manufacturing as well as administrative offices. Products are marketed and distributed by numerous animal health companies across the globe.

Colorado Serum Company is proud to be a 4th generation family-owned company, riding the edge of current science while continuing the valued and time honored traditions of personal and responsive service.

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