



Protege lo ganado

VITAMINA K3

REGISTRATION NUMBER Q- 7972-020

FORMULA:

Menadione Sodium Bisulfite
(Vitamin K₃)..... 10 mg.
Vehicle q.s.....1 mL

Dosage size and form: Bottle of 100 mL

VETERINARY USE

SOLUTION FOR INJECTION



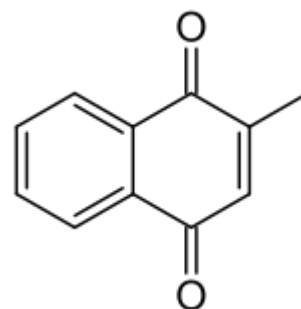
Menadione sodium bisulfite (Vitamina K3)

COAGULANT

INDICATIONS:

VITAMINA K3 Acts as an antihemorrhagic agent, essential for increasing prothrombin levels (coagulation disorders), indicated in the prevention of local or general hemorrhages.

Vitamina K3 is a water-soluble product that promotes the formation of prothrombin and the speed of blood coagulation. Vitamina K3 has an improved antihemorrhagic activity, compared to natural vitamin K and is indicated in the prevention of local (surgery) or general hemorrhages, either due to hypoprothrombinemia induced by overdose of oral anticoagulants, or by factors that limit the absorption and synthesis of vitamin K (obstructive jaundice, liver function alterations, intestinal disorders, ulcerative colitis, intestinal resection, regional enteritis) affecting bovines, horses, dogs and pigs.



Menadione is also called vitamina K3 because it is a derivative of naphthoquinone, a precursor of vitamin K2, and is mostly classified as a provitamin. The chemical name of menadione is 2-methyl-1,4-naphthoquinone.

Vitamina K3 (or menadione) belongs to the group of fat-soluble vitamins and is a very important agent in blood coagulation, it is involved in the synthesis of coagulation factors VII, IX and X, together with prothrombin. Menadione also contributes to the production of glycogen from hepatic glucose and is involved in bone formation and the prevention of osteoporosis.



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Normally, vitamin K is acquired from the diet and is also synthesized by intestinal microorganisms. However, cases of deficiency have been observed under field conditions. Poultry and pigs are the domestic animals most susceptible to vitamin K deficiency. The coagulating action of vitamin K has also been shown to be impaired by aflatoxins and by long-term antibiotic treatment. In ruminants, deficiency can be caused by the ingestion of sweet clover hay in bad condition (a natural source of dicumarol, a vitamin K antagonist).

MECHANISM OF ACTION

Vitamin K acts as a coenzyme of a carboxylase that determines the carboxylation of glutamic acid residues to form the amino acid γ -carboxyglutamic acid (GLA), which activates certain proteins: prothrombin and coagulation factors VII, IX and X. Plasma proteins C, H, S and Z, osteocalcin, and protein GLA from the protein matrix in bone.

In particular, the two carbon residues found in GLA, which are ionized under physiological conditions, are capable of bonding Ca^{2+} or two GLA molecules of the same protein.

The active form of vitamin K is hydroquinone (KH_2), obtained from a reduction reaction catalyzed by a reductase enzyme dependent on NADPH and sulfhydryl groups. During the carboxylation reaction to generate GLA, hydroquinone is converted to epoxy, which is converted to vitamin K by epoxide reductase.

Some anticoagulant drugs (such as warfarin) work by inhibiting reductase, blocking the formation of vitamin KH_2 , which leads to a decrease in some coagulation factors. Menadione (or vitamin K3) is a fat-soluble vitamin with an essential role in blood coagulation: it is involved in the synthesis of prothrombin, but also in that of coagulation factors VII, IX and X. Vitamin K also helps to convert liver glucose into glycogen and may also play certain role in bone formation and prevention of osteoporosis.

PHARMACOKINETICS AND PHARMACODYNAMICS

After parenteral application, vitamin K3 is inserted into the chylomicrons, and from there they pass into the very low-density lipoproteins (VLDL) and the low-density lipoproteins (LDL), from which the transference occurs to the tissues. Vitamin K is stored in small amounts, and, also, it has a long half-life of about 17 hours, which requires a continuous input obtained from the diet and from the synthesizing bacteria found in the intestines. Then, vitamins K1 and K2 undergo β -oxidation and are excreted through urine as such or conjugated with glucuronic acid.

Menadione is metabolized in the liver with formation of dihydroxynatalene and is eliminated via the kidneys and feces through glucuronide and sulfate conjugates.

OVERDOSE

The exact dose is unknown, but repeated use without justification can lead to high levels of menadione and lead to redox stress, with lower levels of glutathione and hemolysis.

DRUG INTERACTIONS

Salicylates can antagonize the action of vitamin K.



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Vitamina K3 antagonizes the effects of coumarin-type anticoagulants, so the joint administration of vitamin K with warfarin and other anticoagulants can cause a decrease in the hypo-prothrombinemic response to these.

Concomitant administration of anticonvulsants may block the action of vitamin K.

SPECIES:

Bovines, Equines, Swine and Canines.

DOSE OF VITAMINA K3:

Bovines and Equines: 15 mL

Swine, Foals and Calves: 3 to 6 mL

Adult canines: 2 to 4 mL

Puppies: 0.5 to 1 mL

ROUTE OF ADMINISTRATION:

Deep intramuscular, Subcutaneous (do not administer more than 5 mL in the same area), or slow intravenous at the discretion of the Doctor of Veterinary Medicine.

WITHDRAWAL PERIOD:

It does not have a withdrawal period in milk and meat.

WARNINGS:

Keep in a dry, cool place at a range of 15-30°C and protected against direct sunlight. Keep out of reach of children and pets. Product for exclusive use in Veterinary Medicine.

Consult a Doctor of Veterinary Medicine.

Available by prescription only.

Exclusive literature for veterinary doctors.

Responsible for content: Technical Department.