1. NAME OF THE VETERINARY MEDICINAL PRODUCT

Baycox Iron 36 mg/ml + 182 mg/ml suspension for injection for piglets

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ml contains:

Active substances:

Toltrazuril	36.4 mg
Iron (III)	182 mg
(as gleptoferron	484.7 mg)

Excipients:

Phenol	5 mg

For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Suspension for injection.
Slightly viscous dark brown suspension.

4. CLINICAL PARTICULARS

4.1 Target species

Pigs (piglets 48 to 72 hours after birth).

4.2 Indications for use, specifying the target species

For the concurrent prevention of clinical signs of coccidiosis (such as diarrhoea) in neonatal piglets on farms with a confirmed history of coccidiosis caused by *Cystoisospora suis,* and prevention of iron deficiency anaemia.

4.3 Contraindications

Do not use in piglets suspected to be suffering from a deficiency of vitamin E and/or selenium.
Do not use in cases of hypersensitivity to the active substances or to any of the excipients.

4.4 Special warnings for each target species

Neonatal piglets may experience clinical signs similar to those due to coccidiosis (such as diarrhoea) for numerous reasons (e.g. other pathogens, stress). Should clinical signs be observed in the two weeks following administration of the product, the responsible veterinarian should be informed.

Frequent and repeated use of antiprotozoals from the same class may lead to the development of resistance.

It is recommended to administer the product to all the piglets in a litter.

Once clinical signs of coccidiosis are evident, damage to the small intestine will have already occurred. Therefore, the product should be administered to all animals before the expected onset of clinical signs, that is, in the prepatent period.

Hygienic measures may reduce the risk of porcine coccidiosis. It is therefore recommended to concomitantly improve the hygiene conditions in the farm concerned, particularly by increasing dryness and cleanliness.

The product is not recommended for use in piglets weighing less than 0.9 kg.

4.5 Special precautions for use

Special precautions for use in animals
The product must not be administered more than once.

Only use this veterinary medicinal product where *Cystoisospora suis* has been historically confirmed on a farm. The responsible veterinarian should take into account the results of clinical examinations and/or analysis of faecal samples and/or histological findings, which confirmed the presence of *C. suis* in a previous infection episode on the farm.

It is not recommended to use the veterinary medicinal product in piglets weighing less than 0.9 kg, as the efficacy and safety of the product has not been evaluated in such small piglets.

Special precautions to be taken by the person administering the veterinary medicinal product to animals
This product contains iron (as gleptoferron complex), which has been associated with anaphylactic reactions after injection. People with known hypersensitivity to iron (as gleptoferron complex) should avoid contact with the veterinary medicinal product.

Accidental self-injection may cause adverse effects. Care should be taken to avoid accidental self-injection. In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician.

This product may be harmful for the unborn child. Pregnant women and women intending to conceive should avoid contact with the veterinary medicinal product, especially accidental self-injection.

Wash hands after use and/or spillage.

4.6 Adverse reactions (frequency and seriousness)

Transient discolouration of the tissue and/or slight swelling may be observed commonly at the site of injection. Anaphylactic reactions may occur rarely.

Deaths have been reported rarely in piglets following the administration of parenteral iron injections. These deaths have been associated with genetic factors or deficiencies of vitamin E and/or selenium. Piglet deaths have been reported which have been attributed to an increased susceptibility to infection due to temporary blocking of the reticuloendothelial system.

The frequency of adverse reactions is defined using the following convention:
- very common (more than 1 in 10 animals treated displaying adverse reaction(s))
- common (more than 1 but less than 10 animals in 100 animals treated)
- uncommon (more than 1 but less than 10 animals in 1,000 animals treated)
- rare (more than 1 but less than 10 animals in 10,000 animals treated)
- very rare (less than 1 animal in 10,000 animals treated, including isolated reports).

4.7 Use during pregnancy, lactation or lay

Not applicable.

4.8 Interaction with other medicinal products and other forms of interaction

None known.

4.9 Amounts to be administered and administration route

Intramuscular use.

Shake well before use until a visually homogenous suspension is obtained and no residual product is adhering to (the bottom of) the glass vial.

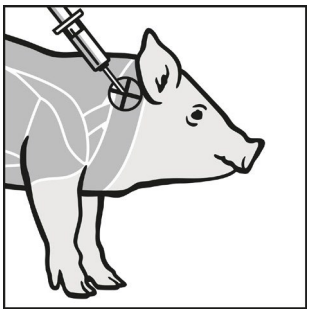
The veterinary medicinal product should be administered to piglets between 48 to 72 hours after birth with a single intramuscular injection of 20 mg toltrazuril/kg body weight and 100 mg iron (as gleptoferron complex)/kg body weight, which is a dose volume of 0.55 ml/kg body weight.
To ensure the correct dosage, the piglets' body weight should be determined as accurately as possible.

Each piglet should be injected with a 21 gauge needle. The preferred injection site is the neck area (see illustration below).

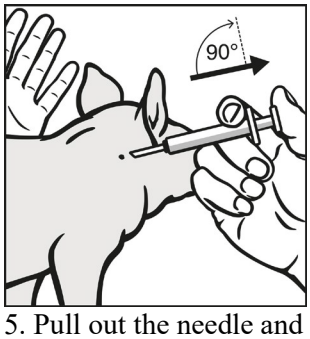
1. Shake the vial well before use.

2. Pull the skin to the side before inserting the needle.

3. Introduce the needle at an angle of 90° and inject the product.



4. Inject intramuscularly behind the ear into the neck.



5. Pull out the needle and release the skin.

The rubber stopper of the vial may be safely punctured up to 30 times.
When administering the product to a group of animals, use a draw-off needle that has been placed in the vial stopper to avoid excess broaching of the stopper. The draw-off needle should be removed after administration.

When administering the product to larger groups of animals, a multi-dosing device (with vented draw-off apparatus) is recommended. The doser on the device should be adjusted according to the piglets' weight prior to injection.

4.10 Overdose (symptoms, emergency procedures, antidotes), if necessary

The tolerance of the veterinary medicinal product has been assessed after a single intramuscular administration of up to 5 times the recommended dose, as well as after repeated administrations.

A single intramuscular administration of 5 times the recommended dose, or 3 administrations of the recommended dose, did not cause systemic adverse effects or abnormalities in local injection site observations.

After the 2nd or 3rd administration of 3 times the recommended dose, clinical signs were observed such as apathy, dyspnoea, elevated rectal temperatures, reddening of the skin, ataxia, and/or adverse events of the legs or joints (such as polyarthritis). In some cases (n=13 out of n=29 animals treated multiple times with 3 times the recommended dose) this resulted in death of the animals. These observations are presumably due to iron overload.

Transferrin-iron saturation levels may lead to increased susceptibility for (systemic) bacterial infection, pain, inflammatory reactions as well as abscess formation at the injection site.

Persistent discolouration of muscle tissue at the injection site may occur.

After an overdose, iatrogenic poisoning may occur which may cause the following clinical signs: pale mucous membranes, haemorrhagic gastroenteritis, vomiting, tachycardia, hypotension, dyspnoea, oedema of the limbs, lameness, shock, liver damage, and death.

In case of overdose, supportive measures such as chelating agents (e.g. deferoxamine) can be used.

4.11 Withdrawal period(s)

Meat and offal: 53 days.

5. PHARMACOLOGICAL PROPERTIES

Pharmacotherapeutic groups: Toltrazuril, combinations
ATCvet code: QP51BC51

5.1 Pharmacodynamic properties

Toltrazuril is a triazinon derivative and an antiprotozoal agent. It has coccidiocidal activity against all intracellular development stages of the genus *Cystoisospora*, that is, merogony (asexual multiplication) and gamogony (sexual phase).

Iron is an essential micronutrient. It is a constituent of haemoglobin and myoglobin and has a key role in enzymes, such as cytochromes, catalases, and peroxidases. Piglets are born with only moderate stores of iron and the milk consumed by piglets is a poor source of iron. In intensive farming conditions, piglets do not have access to other sources of iron, such as soil. Therefore, piglets should be supplemented with iron.

5.2 Pharmacokinetic particulars

After a single intramuscular injection of the recommended dose rate of 20 mg toltrazuril per kg body weight to piglets, toltrazuril plasma pharmacokinetics are characterised by biological variability. Toltrazuril reaches peak plasma concentrations of 4.17 to 6.43 mg/l within 5 days. Total plasma exposure reaches between 1046 and 1245 mg*h/l. Toltrazuril is eliminated from plasma with a half-life of about 3 to 4 days showing substantial metabolism to toltrazuril-sulfoxide and toltrazuril-sulfone, the main active metabolite. Toltrazuril-sulfone shows plasma peak concentrations of 6.23 to 8.08 mg/l at 11 to 15 days after injection of the parent drug. Total plasma exposure reaches 3868 to 4097 mg*h/l. Toltrazuril-sulfone is eliminated from plasma with a half-life of about 5 to 7 days. Toltrazuril and its metabolites are mainly eliminated in faeces via biliary excretion and to a small extent via urine.

After intramuscular injection, the iron complex is absorbed mainly into the lymphatic tissue, where it is split to release iron (III)-ions. Plasma iron concentration peaks within the first day reaching concentrations of 548 mg/l at 6 hours after injection. Free iron (III)-ions are removed from plasma with a half-life of approximately 8 hours. From 72 h onwards, this is followed by a very slowly decreasing plasma concentration with a calculated mean half-life of 960 h, indicating equilibrium conditions. In the blood, free iron (III)-ions bind to transferrin (transport form) and are mainly used for the synthesis of haemoglobin. The iron (III)-ions are stored as ferritin in the main storage organs (e.g. liver, spleen and the reticuloendothelial system), and iron elimination does not play a quantitatively important role. There is no specific organ for iron excretion. Iron is not readily eliminated; most of it is re-used, while only small amounts are eliminated. The primary routes of iron excretion are via faeces and urine, there are additional small losses in sweat, hair and nails.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Phenol
Polysorbate 80
Polysorbate 20
Sodium chloride
Water for injections

6.2 Major incompatibilities

In the absence of compatibility studies, this veterinary medicinal product must not be mixed with other veterinary medicinal products.

6.3 Shelf life

Shelf life of the veterinary medicinal product as packaged for sale: 3 years.
Shelf life after first opening the immediate packaging: 28 days.

6.4 Special precautions for storage

This veterinary medicinal product does not require any special storage conditions.

6.5 Nature and composition of immediate packaging

Colourless silicone-coated glass Type II vials with chlorobutyl stoppers and aluminium caps containing 100 ml.
Cardboard box with 1 vial.

6.6 Special precautions for the disposal of unused veterinary medicinal product or waste materials derived from the use of such products

Any unused veterinary medicinal product or waste materials derived from such veterinary medicinal products should be disposed of in accordance with local requirements.

7. MARKETING AUTHORISATION HOLDER

Elanco Animal Health GmbH
Alfred-Nobel-Str. 50
40789 Monheim
Germany

8. MARKETING AUTHORISATION NUMBER(S)

EU/2/19/239/001

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 20/05/2019

10. DATE OF REVISION OF THE TEXT

Detailed information on this veterinary medicinal product is available on the website of the European Medicines Agency (http://www.ema.europa.eu/).

PROHIBITION OF SALE, SUPPLY AND/OR USE

Not applicable.