1 NAME OF THE VETERINARY MEDICINAL PRODUCT

AMX 10 mg/ml Concentrate for solution for fish treatment

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Active substance:
Deltamethrin 10 mg/ml

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Concentrate for solution for fish treatment
Slightly opaque, pale yellow liquid

4 CLINICAL PARTICULARS

4.1 Target Species

Atlantic salmon (*Salmo salar*) and rainbow trout (*Oncorhynchus mykiss)*.

4.2 Indications for use, specifying the target species

For treatment of adult and preadult sea lice (*Lepeophtheirus salmonis*) on Atlantic salmon (*Salmo salar*) and rainbow trout (*Oncorhynchus mykiss)*.

4.3 Contraindications

Do not use on fish with infectious diseases, as treatment against sea lice may aggravate the clinical signs and increase the mortality.

4.4 Special warnings for each target species

The efficacy of this medicinal product declines with water temperatures below 6°C.
Avoid treatment if large amounts of organic material are present in the sea water or if the sea-cage is overgrown, as this may reduce the efficacy of the treatment.
Dead sea lice may remain on the fish for a few days after treatment (depending on the water temperature).
AMX does not prevent reinfestation with sea lice after treatment.
Lack of efficacy and reduced sensitivity to deltamethrin has been observed.
Suboptimal treatment regimen and frequent treatments as well as the use of pyrethroids only for sea lice treatment, can induce reduced sensitivity in the sea lice with lack of efficacy as a possible consequence.

4.5 Special precautions for use

Special precautions for use in animals

All fish should be oxygenated during treatment. Ensure that the oxygen level is above 7 mg/l before the treatment is initiated and that it is kept above 7mg/l during the entire duration of the treatment.
At water temperatures below 6°C the product's safety margin is reduced. Extra precautionary measures should be exercised if treatments are performed at low water temperatures.
The risk of intoxication may increase in fish with severe skin lesions.
Overgrowth of algae on the sea-cages/nets may prevent water exchange after treatment. This may extend the exposure period and increase the risk of intoxication of the fish.
Treatment should not be carried out unless some degree of water current is present. Without a current the exposure period may be extended and increase the risk of overdosing. If water currents are low at the time of removal of the tarpaulin the use of an artificial water-current (e.g. a boat motor propeller) is recommended in order to speed up the water exchange in the treatment unit.

Special precautions to be taken by the person administering the veterinary medicinal product to animals

- Wear protective clothing (i.e. cotton overalls and nitrile rubber or neoprene gloves (0.3 mm thick)) and disposable face mask when handling the product and tarpaulins and nets of treated cages.
- Wear protective clothing, gloves, eye protection and a disposable face mask when mixing and administering the product.
- Do not smoke, drink or eat while handling the product.
- Avoid contact with the skin, eyes, nose and mouth. If clothing becomes contaminated remove without delay and wash skin thoroughly with soap and water. Change out of protective clothing and wash hands thoroughly after using the product. Launder protective clothing before re-use.
- The product is of low hazard by oral and dermal routes. Inhalation of product may cause irritation to the mucous membranes and respiratory tract. Skin exposure may cause transient sensations (tingling, numbness) which disappear after a few hours. Obtain medical advice if symptoms persist.
- All equipment which has been in contact with the product should be thoroughly cleaned after completion of treatment.

The product may cause harm to the unborn child. Pregnant women should therefore be extra careful when handling the product.

Other precautions

The substance is toxic to crustaceans and should not be used in sea farms where crabs or lobsters are kept in the close vicinity of the treated sea-cages (<200 m), or when local water-currents increase the likelihood of exposure.
To prevent toxic effects on local aquatic organisms and to prevent toxic waste of deltamethrin to be washed into the littoral zone, bath treatment should be performed at outgoing tide or during periods with a local outgoing current.
See also 5.3

4.6 Adverse reactions (frequency and seriousness)

The fish tend to move closer to the surface during treatment and increased restlessness and jumping frequency are observed. Occasional mortalities have also been observed after treatment with the recommended treatment regimen. Miscalculation of the treatment volume (overdosing), extended exposure period or low water temperature may increase the frequency of adverse reactions or signs of intoxication (see section 4.10 "Overdose").

4.7 Use during pregnancy, lactation or lay

Use only in accordance with a benefit/risk assessment by the responsible veterinarian because reproduction toxicity has not been established in the target species.

4.8 Interaction with other medicinal products and other forms of interaction

No data available.

4.9 Amounts to be administered and administration route

The delousing should be performed in a well-boat or in a sea-cage with a raised net enclosed by a tarpaulin. This is to ensure proper control of the treatment volume and the treatment dosage, in addition to reduce the amount of AMX used and the environmental exposure. Calculate the water volume as exactly as possible to ensure correct dosing.

Treatment dose: 0.2 ml AMX per m3 (1000 l) sea water in the treatment unit.
This corresponds to 2 microgram deltamethrin/litre sea water.
For calculation of the treatment volume in the unit, please refer to the section below; "Treatment volume".

Treatment period: 30 minutes

Treatment volume:

Wellboat:
The dosage is calculated according to the actual volume of the treatment unit.

Tarpaulin:
The dosage is calculated according to the actual volume of the treatment unit (tarpaulin volume).

Method of administration:
The product should be brought to room temperature before use in order to flow more easily out of the bottle. Shake the bottle well before use. Calculate the volume in the treatment unit and the AMX dose. Use a suitable container and dilute the calculated quantity of AMX in seawater. Diluting the product in a large volume of seawater will ensure a better dispersion and thereby the efficacy of the treatment. After a short period of stirring, the diluted solution must be spread evenly throughout the treatment unit. It is recommended to use a pump with low or moderate pressure to further improve an even dispersion. Do not disperse under high pressure as this may cause atomising and/or foaming.

It may be necessary to repeat the treatment if reinfestation with sea lice occurs, but due to the environmental properties of the product (see section 5.3) the use of the product should be kept to a minimum. As a minimum requirement a period of at least 14 days should elapse between treatments in order to provide a protection of the environment.

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

Equilibrium problems, behaviour disturbances, gasping for air in the water surface, alteration in pigmentation and mortalities are symptoms of an overdose. If any of these symptoms occur, the treatment should be terminated and unmedicated sea water let in. If the fish are treated in a raised net enclosed by a tarpaulin, the tarpaulin should be removed and the net released to normal depth immediately. An artificial water-current in order to speed up the water exchange in the treatment unit is recommended (e.g. by using a boat motor propeller).

The acute toxicity of deltamethrin in fish is high. The toxicity is affected by the dose, exposure period and the water temperature. Signs of intoxication have been seen in laboratory trials with doses 5 times the recommended dose at 30 minutes exposure and doses 3 times the recommended dose at 60 minutes exposure. Experience from clinical use of the product indicates that lower doses and/or other exposure conditions may also cause signs of intoxication.

4.11 Withdrawal period(s)

5 degree days for treated Atlantic salmon.
5 degree days for treated rainbow trout.

5 PHARMACOLOGICAL or IMMUNOLOGICAL PROPERTIES

Pharmacotherapeutic group: Ectoparasiticide for topical use, Pyrethrins and Pyrethroids.
ATCvet code: QP53AC11

5.1 Pharmacodynamic properties

Deltamethrin is a synthetic pyrethroid with insecticidal effect and acts by affecting the sodium channels after depolarization and thus disturbing the normal repolarization of the cells. This blocking of transmission of impulses in the nervous system of the parasites leads to hyperexcitation, paralysis and death of the parasite. The effect on sea lice is due to direct absorption of deltamethrin through the parasite's cuticle and not via absorption in the host.

5.2 Pharmacokinetic properties

Deltamethrin is almost insoluble in water (solubility < 0.002 mg/l at 20°C). The properties of the formulation make it soluble in seawater.

Deltamethrin is mainly absorbed via the gills in fish and is distributed to all organs and tissues.
With a short treatment period (30 minutes), the absorption of deltamethrin in fish is low. The substance is predominantly eliminated through the bile. The metabolism of the substance is less in fish than in mammals. There are no signs of accumulation in tissues.

5.3 Environmental properties

Deltamethrin is toxic to aquatic and sediment living species and may cause adverse effects in the vicinity of treated sea cages. Also at distances of up to 4 kilometers downstream short term effects after treatment can be seen in sensitive organisms. Deltamethrin demonstrates high affinity to organic matter and particles in the water column and in sediments. Deltamethrin is very stable and slowly degradable when bound to sediments, both at aerobic and anaerobic conditions.

The environmental risk assessment of deltamethrin is based on the theoretical use of only a single (annual) application in a single cage at one site. More frequent use and/or on a larger scale may pose an increased risk to the environment. In order to ensure safe use (including large scale and multiple treatments) of AMX under a

combination of different environmental conditions (e.g. low water current speeds, shallow waters, short distance to the shore etc) local environmental regulations governing discharges, where applicable, must be adhered to. If there is any doubt about safe use, relevant competent authorities should be consulted or professional advice sought accordingly. Please also refer to section 4.9 and 6.6.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Macrogolglycerol ricinoleate
Calcium dodecylbenzene sulphonate in isobutanol
Citric acid anhydrous
N-methylpyrrolidone

6.2 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: 5 years
Shelf life after first opening the immediate packaging: 9 months
Dilute immediately before use, discard any unused solution.

6.4 Special precautions for storage

Protect from frost.

6.5 Nature and composition of immediate packaging

Aluminium bottle with a tamper evident black polypropylene screw cap.
The bottle contains 250 ml or 1000 ml of concentrate.

Not all pack sizes may be marketed.

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 product should be disposed of in accordance with local requirements.

This formulated product is designed for the treatment of fish. However, at levels greater than the treatment dose, the product could be harmful to fish and aquatic life. Do not contaminate surface waters or ditches with the product or used containers.

7 MARKETING AUTHORISATION HOLDER

PHARMAQ AS
Skogmo Industriområde
Industrivegen 50
7863 Overhalla
Norway

8 MARKETING AUTHORISATION NUMBER(S)

VPA10804/002/001

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 6th February 2009
Date of latest renewal: 16th December 2011

10 DATE OF REVISION OF THE TEXT

September 2017