



Guidelines for sampling of feed medicated with SLICE® (emamectin benzoate)

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Introduction

Proper manufacture of medicated feeds and administration of the correct dosage are essential to help ensure successful treatment of fish, prevent sub-optimal drug delivery and minimize pressure for the selection of resistance.

SLICE® (emamectin benzoate) is a medicated feed premix indicated for the treatment and prevention of all parasitic stages of sea lice on salmon. Methods to determine the concentration of emamectin benzoate (EB) in feed medicated with SLICE have been developed by analytical chemists at Intervet/Schering-Plough Animal Health and are published in the literature.^{1, 2, 3, 4}

These methods are currently in use at laboratories in all major salmon-producing countries. Many of these labs are recommended by Intervet/Schering-Plough Animal Health because they participate in formal method transfers that verify procedures, as well as comprehensive ring-testing programs.

Intervet/Schering-Plough Animal Health offers a comprehensive SLICE technical support program that includes feed analysis, pre-treatment bioassays, analysis of tissue from treated fish and evaluation of post-treatment lice clearance.

The purpose of this product bulletin is to provide guidance for sampling feed medicated with SLICE for submission to laboratories that analyze medicated feeds. The guidelines are

intended for samples submitted by manufacturing feed mills or commercial farming operations.

The principles of sampling and sample reduction by splitting, also known as “riffing,” are described many places in the literature. We follow the recommendations in the Official Methods of Analysis, Association of Official Analytical Chemists (AOAC) International, which provides instruction on sampling in both Chapter 4 (Animal Feeds) and Chapter 5 (Drugs in Feeds).^{5, 6}

SLICE dosage and administration

Administer feed medicated with SLICE at the recommended feeding rate of 0.5% biomass/day for 7 consecutive days to deliver a dose rate of 50 µg EB/kg biomass/day. If the feeding rate differs from 0.5% biomass/day, then the concentration of SLICE in feed must be adjusted accordingly (Table 1).

TABLE 1

Fish feeding rate (as % of bodyweight)	Target EB concentration in feed (mg/kg)
0.25	20.0
0.5	10.0
1.0	5.0
2.0	2.5
3.0	1.67
4.0	1.25

Table 1. This table illustrates typical emamectin benzoate (EB) concentrations in feed based on varying levels of feed intake and expressed as a percentage of live weight.

Target feed concentrations

Target feed concentrations for feed medicated with SLICE are given as the sole ration for 7 consecutive days and at the recommended dose of 50 µg EB/kg bodyweight.

- ▶ Manufacture feed medicated with SLICE according to label directions.
- ▶ Medicated feed should be top-coated because the active ingredient EB is not stable at high extrusion temperatures.
- ▶ Feed medicated with SLICE should be prepared only at commercial feed mills and not on the farm.

Feed sampling and storage

- ▶ Take 5 to 10 samples at uniform intervals representing the beginning, middle and end of the batch.
- ▶ Take a small sample of unmedicated feed pellets prior to addition of SLICE. This can be used by the laboratory to investigate interferences with the test method.
- ▶ Samples are normally taken from filled bags but may also be taken from bulk feed just prior to bagging.

- ▶ If sampling from bags, we recommend laying the bag horizontally and taking a sample representing the top, middle and bottom of the bag, using a probe or sample thief.
- ▶ Each sample or composite should be about 1 kg (500 g minimum).
- ▶ If a sample splitter is available at the mill, reduce each sample by one-half to one-fourth and combine samples from all 5 to 10 locations together to form a composite. Retain the remaining portion from each of the individual 5 to 10 samples in the event of an atypical result.
- ▶ If a sample splitter is not available at the mill, samples may be reduced once by coning and quartering, using half for preparation of the composite and retaining half of each sample.
- ▶ Ship the composite sample to the analytical lab, along with the sample of unmedicated pellets. Containers should be labeled with the following information: type of feed, date of manufacture, batch number, location where the sample was taken and name of the person performing sampling (or use a sample envelope provided by Intervet/Schering-Plough Animal Health).
- ▶ Samples of feed medicated with SLICE should be stored or shipped to the analytical laboratory cold or frozen.



▶ One composite sample should be submitted for testing and the laboratory should be requested to test the sample in duplicate and report both the individual and average assay values.

▶ If an atypical result is obtained and follow-up testing is necessary, the retained 5 to 10 samples from the batch should be submitted and each tested once.

Sample-splitting techniques

(for feed mills and testing labs)

▶ Mix the sample thoroughly with a large spatula or equivalent.

▶ Pass the sample through a gated riffle splitter. We recommend the one available at: <http://www.jsits.com/geneq/en/vssp25.htm> (slits are adjusted to about 1.5 times the pellet size).

▶ Generally, two to three passes through the splitter are required to reduce the sample enough.

Preparation of the analytical sample

(for testing labs)

▶ Reduce the particle size of the laboratory sample using a method that minimizes moisture loss and maintains the integrity of the analyte. We recommend an analytical

mill for grinding, available at:

http://www.ika.net/owa/ika/catalog.show_productlist?iProductgroup=194&iSubGroup=1&iCS=2.

▶ The ground sample should be a uniform powder, free of any intact pellets.

▶ For longer-term sample storage, freeze samples.

Analysis

Feed samples will be analyzed in duplicate for EB content by standard high-performance liquid chromatography methods. Results for each duplicate sample will be reported to Intervet/Schering-Plough Animal Health and to the submitting feed mill or farm. If batch results are within the approved regulatory target, then no further analysis of samples from the batch will be performed.

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Please contact your local Intervet/Schering-Plough Animal Health representative with questions about the preparation or testing of feeds medicated with SLICE (emamectin benzoate).



References

- ¹ Farer LJ, J Hayes, J Rosen, P Knight. 1999. Determination of emamectin benzoate in medicated fish feed. *Journal of the Association of Analytical Chemists — International*. 82(6):1281-1287.
- ² Farer LJ. 2005. Determination of emamectin benzoate in medicated fish feed — a multi-site study. *Journal of the Association of Analytical Chemists — International*. 88(2):462-467.
- ³ Farer LJ, J Hayes. 2005. Comparison study of two procedures for the determination of emamectin benzoate in medicated fish feed. *Journal of the Association of Analytical Chemists — International*. 88(4):1179-1192.
- ⁴ Higgins-Gruber S, J Hayes, Intervet/Schering-Plough Animal Health. (New method for determination of emamectin benzoate in medicated fish feed. Data on file.)
- ⁵ AOAC Official Method 965.16, Sampling of Animal Feed.
- ⁶ AOAC Official Method 950.02, Animal Feed, Preparation of Analytical Sample.

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Specific product details such as indications, withdrawal time, etc., may vary by country. Please refer to your local package insert for details or contact your local Intervet/Schering-Plough Animal Health representative.

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