



U.S. Fish & Wildlife Service

Aquatic Animal Drug Approval Partnership

DRUG RESEARCH INFORMATION BULLETIN

Calculate Amount of Aquaflor® (florfenicol, 50%) to Add to Fish Feed

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In October, 2005, the U.S. Food and Drug Administration (FDA) Center for Veterinary Medicine (CVM) approved Aquaflor® Type A Medicated Article for use to control mortality in freshwater-reared catfish diagnosed with enteric septicemia (New Animal Drug Application (NADA) 141-246). Aquaflor® (a product of Schering-Plough Animal Health, Kenilworth, NJ) is 50% active florfenicol, which is a broad-spectrum antibiotic with both bacteriostatic and bacteriocidal properties that is active against a variety of Gram-positive and Gram-negative bacteria. Under NADA 141-126, Aquaflor® can only be used through a Veterinary Feed Directive and can only be administered at a treatment regimen of 10 mg florfenicol/kg fish/day for 10 consecutive days.

Current Aquaflor® efficacy research is focused on expanding the product's label claim(s). Much of this work is conducted under Investigational New Animal Drug (INAD) exemption Florfenciol INAD 10-697, which is administered by the U.S. Fish and Wildlife Service (FWS) Aquatic Animal Drug Approval Partnership (AADAP) program. The FWS INAD allows Aquaflor® to be used on a variety of fishes in a variety of experimental and production settings to generate efficacy data needed to support FDA/CVM approval of the following indications: control of mortality in freshwater-reared salmonids diagnosed with systemic coldwater disease or furunculosis; control of mortality in freshwater-reared salmonids and catfish diagnosed with systemic columnaris disease; and control of mortality in tilapia and hybrid striped bass diagnosed with *Streptococcus iniae*. For systemic coldwater disease, furunculosis, and systemic columnaris disease, the proposed treatment regimen is 10 mg florfenicol/kg fish/day for 10 consecutive days. For *Streptococcus iniae*, the proposed treatment regimen may be increased to 15 mg florfenicol/kg fish/day for 10 consecutive days.

Under INAD 10-697, (a) Aquaflor®-medicated feed can be purchased directly from a licensed feed mill or (b) Aquaflor® premix (50% active florfenicol) can be obtained and added to feed by hatchery personnel. In both cases, the intended feeding rate must be taken into account when ordering or preparing medicated feed to ensure that the dosage administered corresponds to 10 mg florfenicol/kg fish/day. For this dosage, AADAP has developed a reference table for easily determining the amount (g) of Aquaflor® premix to add to a 20-kg or 50-lb bag of feed when fish are fed at 0.5 – 5.0% body weight (% BW) in 0.5% increments or are fed at 10% BW (Table 1). However, it is not obvious how to calculate amount of Aquaflor® premix to add to feed for %BWs not listed in Table 1. Therefore, in this bulletin, we describe the mathematical relation between %BW and percent Aquaflor® premix (%AQ) to add to feed and explain how to calculate amount of Aquaflor® premix to add to a known amount of feed to achieve a dosage of 10 mg florfenicol/kg fish/day when fish are fed at any %BW between 0.5 and 10%.

For a dosage of 10 mg florfenicol/kg fish/day, the relation between %BW and %AQ (Figure 1) is described by the following curvilinear equation ($r^2 = 1$):

$$\%AQ = [(0.2001 \div \%BW) - 0.0002].$$

Consequently, determining the amount (g) of Aquaflor® premix to add to a specific amount (g) of feed is a simple, three-step process:

(1) Enter %BW into the equation, and calculate %AQ (e.g., If fish will be fed at 1.5% BW, the %AQ to add to feed = $[(0.2001 \div 1.5) - 0.0002] = 0.133\%$);

(2) Convert %AQ to a decimal fraction (e.g., $0.133\% \div 100 = 0.00133$); and

(3) Multiply the result by the amount (g) of treated feed to prepare (e.g., $[0.00133 \times 20,000 \text{ g feed}] = 26.60 \text{ g Aquaflor}^{\text{®}}$ premix should be added to 20,000 g feed).

Table 1. To determine amount of Aquaflor[®] to add to either a 50-lb (22,680 g) or 20-kg (20,000 g) bag of fish feed, find the percent body weight (%BW) at which fish will be fed, go to the fourth or fifth row of the table, and read the amount (g) of Aquaflor[®] to add.^a

%BW to feed	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	10.0
%AQ to add	0.400	0.200	0.133	0.100	0.080	0.066	0.057	0.050	0.044	0.040	0.020
Amount (g) of Aquaflor [®] to add to either a 50 lb or 20 kg bag of feed											
50 lb	90.72	45.36	30.16	22.68	18.14	14.97	12.93	11.34	9.98	9.07	4.54
20 kg	80.00	40.00	26.60	20.00	16.00	13.20	11.40	10.00	8.80	8.00	4.00

^aAmount (g) of Aquaflor[®] to add to a specific amount (g) of feed = [(amount (g) of feed to be treated) \times (percent Aquaflor[®] to add \div 100)].

Figure 1. Relation between percent body weight (%BW) and percent Aquaflor[®] (%AQ) to add to fish feed to achieve a dose of 10 mg florfenicol/kg fish/day.

