
I am so
Confused!

Introduction

- ✓ Fish pharmacology is **essential** for undertaking treatment of fishes using any **therapeutic chemicals or drugs**.
- ✓ Before recommending any medicine to treat the fish diseases the following factors should be consider:
  i. water quality,
  ii. Pathogens
  iii. fish mortality rate
  iv. legal issues
  v. economics of treatment

- ✓ According to WHO in 1966 – "Drugs is any substance or product which is **used** or **intended** to be used to modify or explore **physiological systems** or **pathological states** for the benefit of the recipient.

How the drugs is given to Fish

ENETRAL

TOPICAL

PARENTAL

❑ Gavage

This is extensively used in experimental work because the dose can be known accurately

It is rarely used in routine fish management as it is labour intensive and stressful to the fish

It involves the use of a stomach tube of caliber appropriate to the individual fish.

Gavage

iii. By Flushing

- ✓ In this method, fishes are kept in **running water** or a **raceway system**, wherein immersion can be **achieved** through flushing, which is also popularly known as, a **California flush**.
- ✓ This means **shutting off** the flow, medicating the water and after an appropriate interval, **restarting** the flow and hence removing the medicated water.
- ✓ Flushing is more **wasteful,** and hence **more** environmentally polluting, than dipping.
- ✓ The major drawback of this method is to obtain a **homogenous distribution** of the medication in water.
- ✓ An adaptation of this procedure is commonly used in hatcheries for the control of **fungal (Saprolegnia) infection**.

1. Enteral Method

Manual Injection:

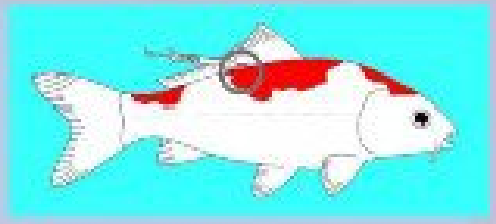
A prerequisite for injection is that the fish should be anaesthetized; without this precaution injury is likely to be caused to the fish and possibly also to the operator. The needle is always directed forward between the scales; it should never pierce a scale.

Intramuscular injection

- given into the epaxial musculature, normally approximately mid-way between the the mid-dorsal line and the lateral line.
- At the former muscle mass is deep, and the latter the scales are smaller.

Intraperitoneal injection

- given into the mid ventral line just below vent.
- mostly given to carp during induced breeding.



Injection into the dorso-median sinus

- recommended for salmonids dorso-median sinus (DMS).
- point of insertion is in the mid dorsal line in the angle at the caudal margin of the cranial dorsal fin.

1. Methylene Blue – الميثيلين بلو

Disease:

- Fungal infections (الفطريات)
- Egg fungus (فطريات البيض)
- External parasites (طفيليات خارجية خفيفة)

Dose:

- **2 ml من المحلول 2% لكل 10 لترات**

أو

- **1–3 mg/L** لمدة **3–5 أيام**

2. Malachite Green – المالاكيت جرين

Disease:

- Ich (White Spot Disease – مرض النقطة البيضاء)
- Fungal infections (الفطريات)

Dose:

- **0.05 mg/L** لمدة **3 أيام**

أو

- 1 مل لكل **40 لتر** (حسب تركيز المنتج التجاري)

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3. Copper Sulfate – كبريتات النحاس

Disease:

- External parasites (طفيليات خارجية)
- Ich (النقطة البيضاء)

Dose:

- **0.20–0.15 mg/L**

(يجب قياس مستوى النحاس يومياً – خطر على الأسماك الحساسة)

4. Formalin – الفورمالين

Disease:

- Protozoan parasites (طفيليات أولية)
- Costia, Chilodonella, Ich

Dose:

- **25 mg/L** (أو 1 مل لكل 40 لتر من محلول 37%)
  لمدة **1 ساعة** في حمام علاجي
  أو
- **10–15 mg/L** في الحوض الرئيسي لمدة **8 ساعات**

5. Salt (Aquarium Salt) – ملح الحوض

Disease:

- Ich
- Fungal infections
- Wounds & stress

Dose:

- **1–3 g/L** كعلاج طويل

أو

- **10–20 g/L** حمام ملحي قصير (10–20 دقيقة)

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6. Metronidazole – ميترونيدازول

7. Praziquantel – برازيكوانتيل

Disease:

- Flukes (ديدان الخياشيم والجلد)
- Tapeworms (ديدان شريطية)

Dose:

- **2 mg/L** في الماء

أو

- **50 mg** لكل **100 g** طعام

8. Kanamycin – كاناميسين

Disease:

- Internal bacterial infections
- Dropsy (الاستسقاء)
- Septicemia (تسمم دموي بكتيري)

Dose:

- **250 mg لكل 40 لتر**

  لمدة **5 أيام**

9. / Tetracycline
Oxytetracycline – تتراسكلين / أوكسيتتراسكلين

Disease:

- Fin rot (تعفن الزعانف)
- Skin ulcers
- Bacterial infections

Dose:

- **250–500 mg لكل 40 لتر**

  لمدة **5 أيام**

10. Erythromycin – إريثرومايسين

Disease:

- Gill disease (أمراض الخياشيم البكتيرية)
- Fin & tail rot

Dose:

- **200 mg** لكل **40** لتر

  لمدة **5** أيام


Thank
you