PARASTROY A
(霸虫灵A)

Natural Antiparasitic
(天然抗寄生虫)

Win Men Biotech SDN. BHD.
雲門生物科技有限公司

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Parasite (寄生虫)

- Parasite is an organism that lives in (endoparasite) or on (ectoparasite) another organism (host). (寄生虫是生活在另一生物（宿主）体内（体内寄生虫）或体外（体外寄生虫）的生物。)
- Parasite depends on the host for food, transportation, protection, etc and can cause some degree of injury to the host. (寄生虫在宿主身上得到食物，运输，保护等，会对宿主造成一定程度的伤害。)
- Parasite has tremendous reproductive capabilities. (寄生虫具有很强的繁殖能力。)

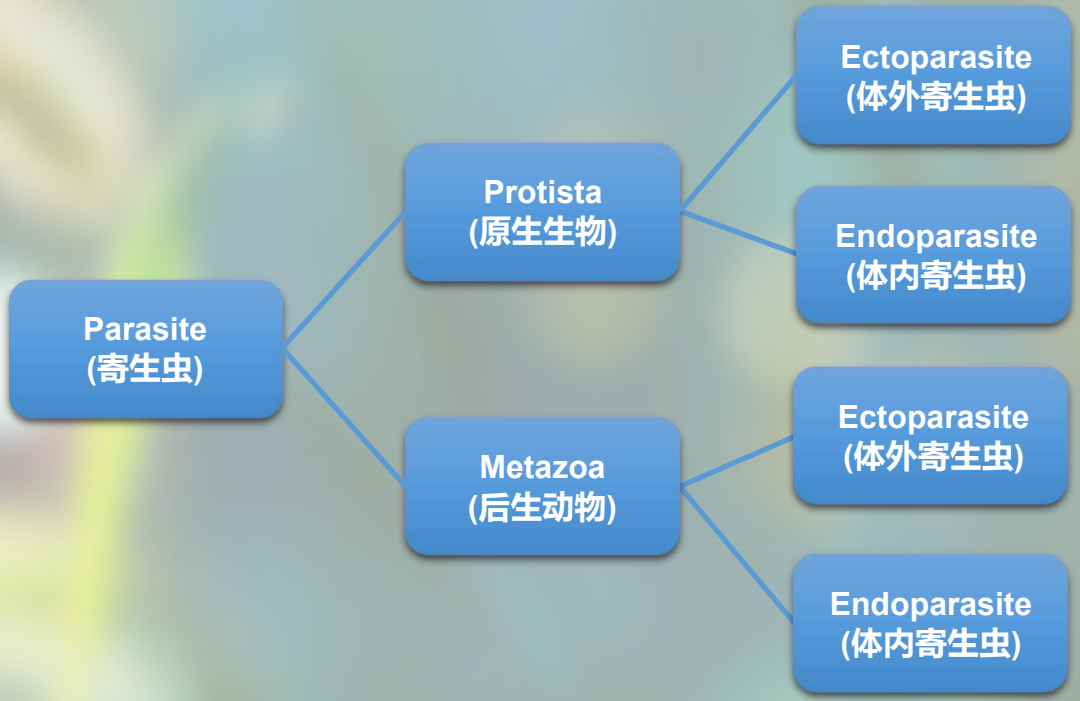
Life cycle (生命周期)

Direct life cycle (直接生命周期)	Indirect life cycle (间接生命周期)
• Lives the lifespan and reproduces within one host. (只在一个宿主中生存并繁殖。)	• Requires more than one host (a definitive host and one or more intermediate host) to complete a life cycle. (需要多于一个宿主（一个确定宿主和一个或多个中间宿主）来完成生命周期。) • The intermediate host is required for developmental and growth phase. (发育和生长阶段发生在中间宿主。) • The definitive host is required for adult life and reproduction phase. (成年和繁殖阶段发生在确定宿主。)

General abnormalities and indication(一般异常和指示)

General abnormalities	General indication
Excess mucus, quivers, anorexia (粘液过多，颤抖，厌食)	General indication parasite infection(一般指征寄生虫感染)
Fin erosion/lesions(鳍糜烂/损伤)	Endoparasite(体外寄生虫)
Stay at bottom (呆在底部)	Gill parasite, especially “Ich”(鳃上寄生虫，尤其是“ Ich”)
Lethargy or listlessness (无生气或无精打采)	Gill parasite(鳃寄生虫)
Flared gills (鳃扩口)	Gill parasite(鳃寄生虫)
Surface gulping or piping (表面吞气)	Parasites on gills(鳃上寄生虫)
Rolling/flashing (滚动/摩擦或撞击东西)	Protozoa or helminth infestation (internal or external)(原生动物或蠕虫侵扰（体内或体外）)

General Classification (一般分类)

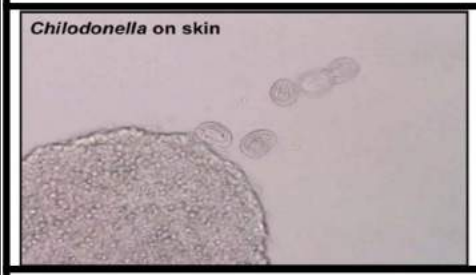


Protista (原生生物)

- Eukaryotic Unicellular organism
- Example:
  - ciliates (motile/sessile) (纤毛虫（移动性/固定性）)
  - flagellates (鞭毛虫)
  - dinoflagellates (腰鞭毛虫)
  - coccidia (球虫)
- Most protistans have direct life cycles.

Motile ciliates (移动性纤毛虫)

Chilodonella

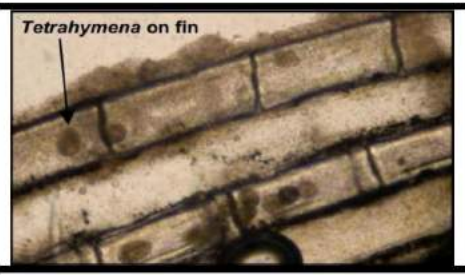


Target: Skin, fin, gills

Life cycle: Direct

Symptoms: Rapid breathing, piping, excess mucus, flashing, loss of condition (快速呼吸，水表面吞气，粘液过多，摩擦或撞击东西，状况不佳)

Tetrahymena



Target: Skin, fin, gills, eyes, internal organs

Life cycle: Direct

Symptoms: Mucus, flashing, intra-ocular lesions, exophthalmos (粘液，摩擦或撞击东西，眼内病变，眼球突出)

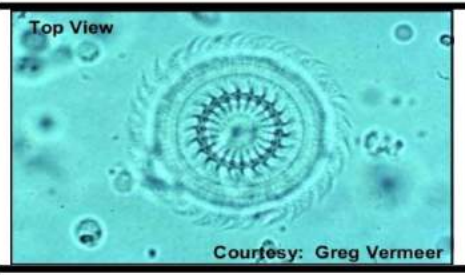
Ichthyophthirius

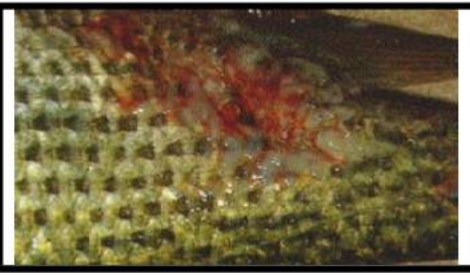
Target: Skin, fin, gills

Life cycle: Direct

Symptoms: White spot disease; no spots visible if on gills only (白斑病； 如果在鳃而已看不到斑点)

Trichodina





Target: Skin, fin, gills

Life cycle: Direct

Symptoms: Rapid breathing, piping, excess mucus, flashing, loss of condition (快速呼吸，水表面吞气，粘液过多，摩擦或撞击东西，状况不佳)

Sessile ciliates (固定性纤毛虫)

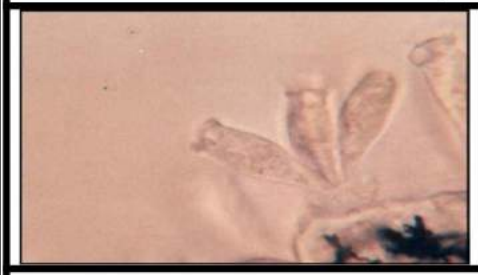
Ambiphrya

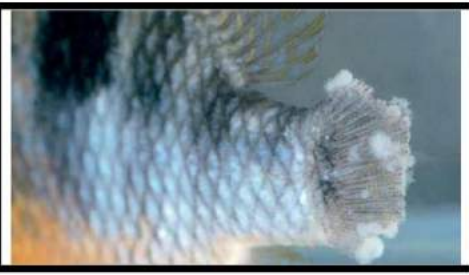
Target: Skin, fin, gills
Life cycle: Direct
Symptoms: Excess mucus, flashing, piping, loss of condition (粘液过多，摩擦或撞击东西，水表面吞气，状况不佳)

Capriniana

Target: Gills
Life cycle: Direct
Symptoms: Excess mucus, flashing, piping, loss of condition (粘液过多，摩擦或撞击东西，水表面吞气，状况不佳)

Apiosoma





Target: Skin, fin, gills
Life cycle: Direct
Symptoms: Excess mucus, flashing, piping, loss of condition (粘液过多，摩擦或撞击东西，水表面吞气，状况不佳)

Epistylis

Target: Skin, fin, (less commonly) gills
Life cycle: Direct
Symptoms: Excess mucus, flashing, piping, loss of condition (粘液过多，摩擦或撞击东西，水表面吞气，状况不佳)

Flagellates (鞭毛虫)

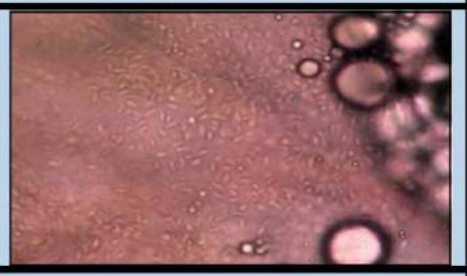
Cryptobia

Target: Common in stomach
Life cycle: Direct
Symptoms: Extreme weight loss, anorexia (极度体重下降，厌食)

Protoopalina

Target: Gastrointestinal tract
Life cycle: Direct
Symptoms: Mortality by the parasites congesting the digestive tract (死亡于寄生虫堵塞消化道)

Spironucleus



Target: Gastrointestinal tract
Life cycle: Direct
Symptoms: Weight loss (anorexia), mortality of fry and juveniles (体重减轻（厌食），鱼苗和幼鱼死亡)

Coccidia (球虫)

Coccidia

Target: Common in intestinal tract
Life cycle: Direct
Symptoms: Weight loss, mortality (体重下降，死亡)

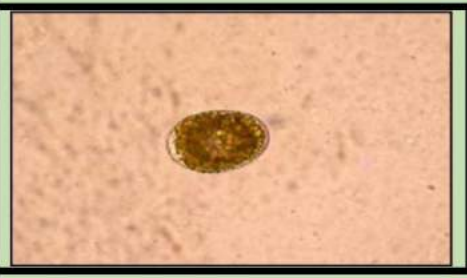
Flagellates (鞭毛虫)

Ichthyobodo

Target: Skin, fin, gills
Life cycle: Direct
Symptoms: Blue slime, flashing, piping, excess mucus, clamped fins (蓝粘液，摩擦或撞击东西，水表面吞气，粘液过多，夹鳍)

Dinoflagellates (腰鞭毛虫)

Piscinoodinium



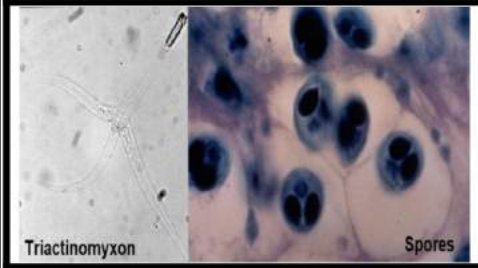
Target: Skin, fin, gills
Life cycle: Direct
Symptoms: Mortality, lethargy, piping; “velvet” (if on skin) (死亡，无生气，水表面吞气；“丝绒”（如果在皮肤上））

Metazoa (后生动物)

- Multicellular organism
- Example:
  - myxozoans (粘虫)
  - monogeneans (单殖吸虫)
  - acanthocephalans (棘头虫)
  - trematodes (吸虫)
  - cestodes (绦虫)
  - nematodes (线虫)
  - pentastomes (舌虫)
  - leeches (吸血虫)
  - crustaceans (甲壳虫)
- Fish frequently serve as intermediate hosts for larval parasites of many animals, including people

Myxozoans (粘虫)

Myxosoma cerebralis

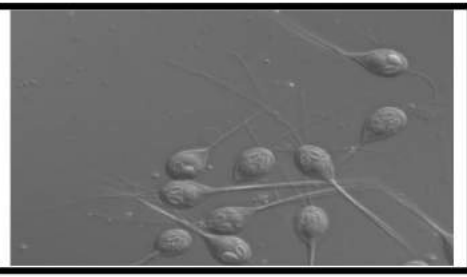


Target: Head, cartilage, backbone

Life cycle: Indirect, involving tubifex worm

Symptoms: Blacktail, skeletal deformity (黑尾鱼，骨骼畸形)

Henneguya



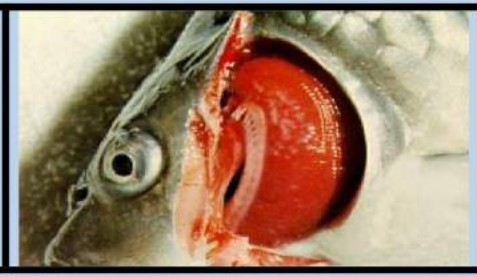
Target: Any

Life cycle: Indirect, involving oligochaete worm

Symptoms: Severe hypoxia, carcass condemnation (严重缺氧，胴体受损)

Monogeneans (单殖吸虫)

Dactylogyrid

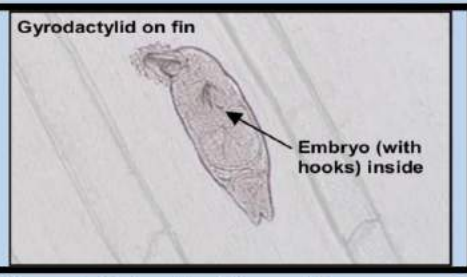


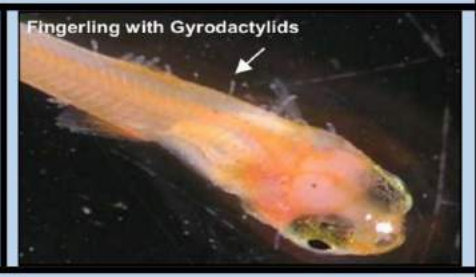
Target: Primarily gills

Life cycle: Direct

Symptoms: Piping, weight loss, skin lesions (水表面吞气，体重下降，皮肤损伤)

Gyrodactylid





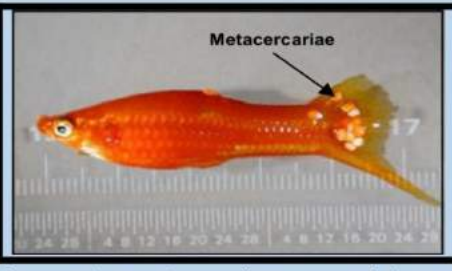
Target: Primarily skin and fin

Life cycle: Direct

Symptoms: Excess mucus, flashing, weight loss (粘液过多，摩擦或撞击东西，体重下降)

Trematodes (吸虫)

Digeneans



Target: Metacercariae (juvenile encysted stage) in any internal or external tissue (if fish are intermediate host); adults usually in gut lumen (if fish are the final host)
Life cycle: Indirect, involving bird, snail and fish with fish usually as intermediate host
Symptoms: Flared gills, hypoxia, piping (鲳扩口，缺氧，水表面吞气)

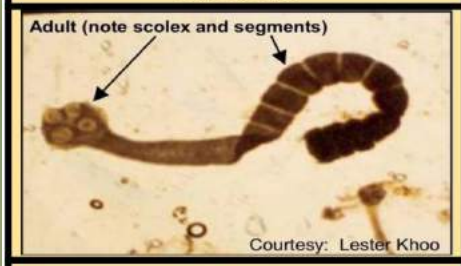
Nematodes (线虫)

Camallanus

Target: Intestinal tract, all other organs
Life cycle: Indirect, requires intermediate invertebrate host
Symptoms: Visualize worms protruding from anus (可看见蠕虫从肛门伸出)

Cestodes (绦虫)

Tapeworm



Target: Adults in gastrointestinal tract; larvae in any organ
Life cycle: Indirect, with fish can be final host or intermediate host
Symptoms: Weight loss, enteritis, mortality (体重下降，肠炎，死亡)

Nematodes (线虫)

Capillaria

Target: Gastrointestinal tract
Life cycle: Direct
Symptoms: Weight loss, pot belly (体重下降，大肚)

Contracaecum

Target: Body cavity, liver, muscle, heart, swim bladder
Life cycle: Indirect, includes birds and invertebrates
Symptoms: No visible external symptoms (没有可见的外部症状)

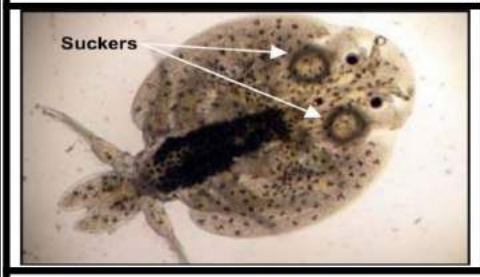
Eustrongylides

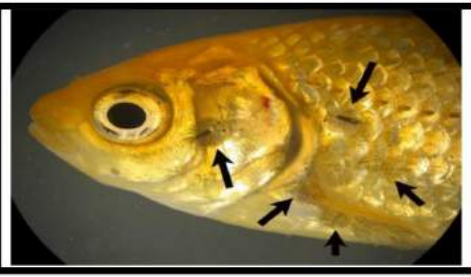
Target: Internal tissues
Life cycle: Indirect, with fish as intermediate host, wading bird as definitive host
Symptoms: Weight loss, pot belly（体重下降，大肚）

Pentastomes (舌虫)		Acanthocephalans (棘头虫)	Leeches (吸血虫)
Pentastome		Thorney-head worm	Leeche
			
Target: Muscle, body cavity, internal organs **Life cycle:** Indirect, includes aquatic reptile (turtles, snakes, alligators) as final host **Symptoms:** No visible external symptoms (没有可见的外部症状)		**Target:** Adults in gastrointestinal tract; larvae in mesentery liver **Life cycle:** Indirect, requires invertebrate host **Symptoms:** Enteritis, mortality (肠炎，死亡)	**Target:** Skin, gills, oral cavity **Life cycle:** Direct **Symptoms:** Anemia, weight loss (贫血，体重下降)

Crustaceans (甲壳虫)

Argulus



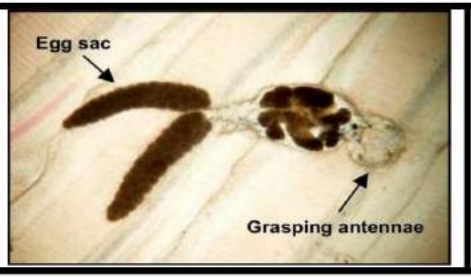


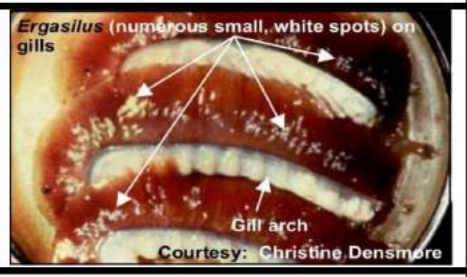
Target: Skin, fin

Life cycle: Direct

Symptoms: Excess mucus, flashing, lethargy, loss of appetite (粘液过多，摩擦或撞击东西，无生气，厌食)

Ergasilus



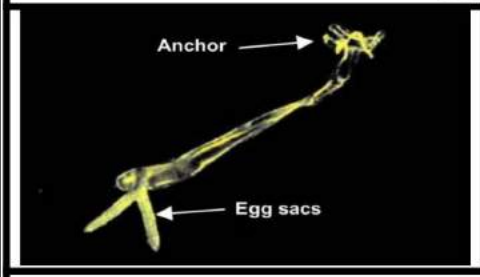


Target: Primarily gills

Life cycle: Direct

Symptoms: Impaired respiration, anemia, growth retardation, mortality (呼吸障碍，贫血，发育迟缓，死亡)

Lernaea



Target: Skin, fin

Life cycle: Direct

Symptoms: Excess mucus, flashing (粘液过多，摩擦或撞击东西)

Isopod

Target: Skin, fin, gills

Life cycle: Direct

Symptoms: Flashing, emaciation (摩擦或撞击东西，瘦弱)

Aquaculture (水产养殖)

- Aquaculture environments that are suitable for growth and reproduction of cultured animals are also hospitable to parasites. (适于养殖动物生长和繁殖的水产养殖环境也是适于寄生虫的环境。)
- Therefore, aquaculture animals mortalities and abnormalities associated with parasites are well documented, indicating their importance in aquaculture. (因此在水产养殖动物与寄生虫有关的死亡和异常已得到充分记录，表明了寄生虫在水产养殖中的影响力。)
- Parasite infections on farms can be devastating with serious socioeconomic, ecological and welfare consequences. (农场的寄生虫感染会给社会经济，生态和福利带来毁灭性的后果。)

Impact (影响力)

Direct impact (直接影响):	Indirect impact (间接影响):
• reduced growth and FCR (生长和FCR降低) • rejection or downgrading of product during processing (导致产品拒收或降级) • mortality of the stock (水产死亡) • increased costs of removing or checking for mortalities (因清除尸体和调查死亡原因而增加成本)	• increased susceptibility to other infections (更容易感染其它疾病) • the inability to move infected stock to other sites (无法搬迁感染的水产) • the potential legislative burdens (潜在立法负担)

Chemical antiparasitics (化学抗寄生虫)

Chemicals	Insecticides	Antiparasitics	Antibiotics
Formalin			
Copper(II) sulfate		Praziquantel	
Potassium permanganate		Fenbendazole	
Methylene blue	Dipterex	Levamisole	Metronidazole
Malachite green		Chloroquine	
Hydrogen peroxide			
Sodium percarbonate			

Natural antiparasitics (天然抗寄生虫)

- Since ancient times, humans have been using various spices, such as garlic, clove, turmeric, cinnamon, etc to deal with parasites. (自古以来，人类使用各种香料，如大蒜，丁香，姜黄，肉桂，等，来处理寄生虫。)

- With the advancement of science, it was discovered that the spices' secondary metabolites have the antiparasitic function. (随着科学的进步，人们发现是香料的次生代谢产物具有抗寄生虫功能。)

Secondary metabolites (次生代谢产物)

- Secondary metabolites are biological active compounds that play a role in defense. (次生代谢产物是生物活性化合物，在防御中发挥作用。)
- After use, they have no residues, no toxic side effects on animals and their products, and are not easy to develop drug resistance. (使用后对动物及其产品无残留、无毒副作用，不易产生耐药性。)
- Therefore, exploiting the diversity and bioactivity of spices' secondary metabolites may be a viable alternative. (因此，开发各种香料次生代谢产物的多样性和生物活性是一个可行的选择。)

PARASTROY A (霸虫灵A)

- With regards, Win Men's R&D Department turned to this direction and set out to use the secondary metabolites of spices as antiparasitic. (为此，云门研发部朝着这个方向，着手利用各种香料的次生代谢产物来抗寄生虫。)

- Through extensive research and development, Win Men's Fatty Acid Series presenting **PARASTROY A**, a natural antiparasitic product. (通过广泛的研发，云门的脂肪酸系列推出了**霸虫灵A**，一种天然抗寄生虫产品。)

Mode of action (作用模式)

Direct mode (直接模式)

Restricting parasites growth and reproduction, and causing parasite death. (限制寄生虫的生长和繁殖，并导致寄生虫死亡。)

- Decreasing egg count. (减少蛋的数量。)
- Decreasing egg hatchability. (降低蛋的孵化率。)
- Affecting larval establishment, larval motility and mortality. (影响幼虫的形成，幼虫的活动力和死亡。)
- Impairing parasite development. (损害寄生虫的发育。)

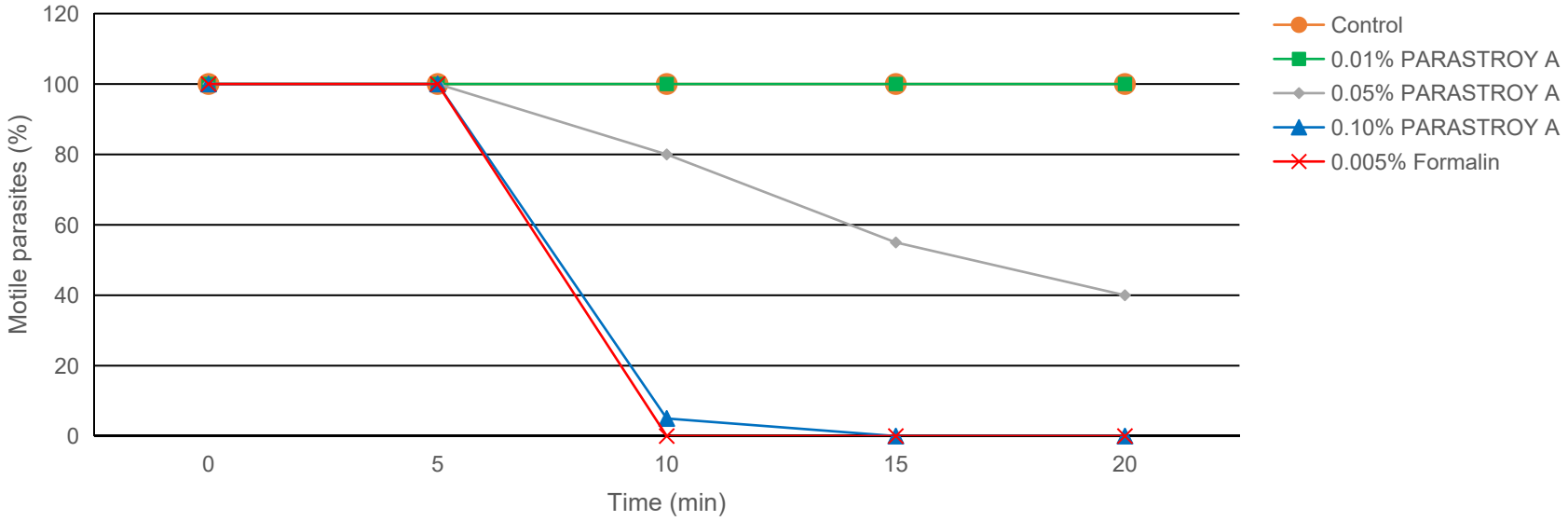
Indirect mode (间接模式)

Regulating the host's immune system to defend against parasite. (调节宿主的免疫系统来抵抗寄生虫。)

- Increases the activity of T cells, macrophages and other immune cells to defend against parasite. (增加T细胞，巨噬细胞和其他免疫细胞的活性来抵抗寄生虫。)

In vitro test (室内实验)

- In vitro test showed that **PARASTROY A** at 0.10% have comparable antiparasitic effect as formalin at 0.005%. (In vitro试验显示，0.10%的**霸虫灵A**具有与0.005%福尔马林相当的抗寄生虫作用。)



In vivo test - water bath treatment (临床实验 - 水浴疗法)

- In vivo test showed that water bath treatment using **PARASTROY A** at 0.10% able to remove ectoparasites infection in Tilapia fingerlings (average weight 3.50 ± 0.06 g). (In vivo试验显示，使用水浴疗法，0.10%的霸虫灵A能够去除罗非鱼鱼种（平均重量3.50 ± 0.06 g）的体外寄生虫感染。)

Treatment	Mean ectoparasites number		
	2 days post treatment	14 days post treatment	30 days post treatment
Control	49.53 ± 19.53	45.90 ± 28.81	127.33 ± 82.91
0.10% PARASTROY A	1.73 ± 1.58[a]	1.40 ± 1.54[a]	0[a]

- The data following by the different letters are significantly different ($P < 0.05$).

In vivo test - feeding treatment (临床实验 - 餵食疗法)

- In vivo test showed that feeding treatment using **PARASTROY A** at 1kg/ton feed able to remove ectoparasites infection in adult Tilapia (average weight 100 ±20 g). (In vivo 试验显示，使用餵食疗法，每公吨饲料添加1kg霸虫灵A能够去除成年罗非鱼（平均重量 100 ±20 g）的体外寄生虫感染。)

Treatment	15 days post treatment	30 days post treatment	45 days post treatment
Control (1 ton feed)	Slight	Moderate	Heavy
PARASTROY A (1kg/ton feed)	–	–	–

- The degree of infestation of ectoparasites slight (less than 10), moderate (10-20) and heavy (over than 20) from mucus and gills was subsequently counted under a microscope.

Conclusion (结论)

- Pollution and drug resistance are not only a future threat; they are present right here and now. they are the biggest threats to global health, food security, and development today. (环境污染和耐药性不仅是未来的威胁，而是现在就存在着，是当今全球健康和粮食安全与发展的最大威胁。)

- **PARASTROY A** is a natural antiparasitic product that has the same effects as chemical products but with no residues, no toxic side effects and is not developing drug resistance. It is a good alternative. (**霸虫灵A**是一种天然抗寄生虫产品，具有与化学产品相同的效力，但却无残留，无毒副作用，不产生耐药性。是一个很好的替代品。)

Recommended usage (推荐用法)

- Mix 5 kg PARASTROY A in 1 ton of feed. (每公吨饲料中添加5公斤霸虫灵A。)
- No withdrawal period. (无停药期。)

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