



Biovectrol® 10EM



MULTI FUNCTIONAL ECO-ENVIRONMENTALLY FRIENDLY FORMULATION FOR ANIMAL HYGIENE

BIOVECTROL® 10EM is a new concept, water-based, multifunctional, eco-environmentally friendly solution based on unique concoction of botanical extracts and Etofенprox®¹ design to protect and enhance animal health.

BIOVECTROL® 10EM has the following effective functions:

- **Disinfectant**
- **Insecticide**
- **Ovicidal/Larvicidal**
- **Insect Repellent**
- **Fungicide**
- **Deodoriser**

¹ **ETOFENPROX**, is a unique "CHO-compound" composed of Carbon, Hydrogen and Oxygen only. **ETOFENPROX** has been highly evaluated through the **World Health Organization Pesticide Evaluation Scheme (WHOPES)** and successfully approved by the Division of Tropical Diseases, WHO in 1997 with code number **WHOPES/97.24.1**.



➤ **Disinfectant**

BASIC BACTERIAL ACTIVITY IN ANIMAL FARMS

TEST MICRO ORGANISMS	Initial count of test micro organism per ml of test mixture	Average count of surviving test micro organism per ml of test mixture at 45 & 60 minutes	Percentage of test micro-organism inactivated at 45 & 60 minutes
Salmonella Enteritidis phage Type 4 (Poultry Isolate)	41 x 10 ⁶	0	> 99.99%
Salmonella Typhimurium (Poultry Isolate)	91 x 10 ⁶	0	> 99.99%
Escherichia Coli (Poultry Isolate)	95 x 10 ⁶	0	> 99.99%
Escherichia Coil O157:H7 (Cattle Isolate)	47 x 10 ⁶	0	> 99.99%
Pasteurella Multicoda (ATCC 12948)	19 x 10 ⁶	0	> 99.99%
Salmonella Choleraesuis (ATCC 10708)	57 x 10 ⁶	0	> 99.99%
Actinobacillus Pleurophbcillus (Pig solate)	28 x 10 ⁶	0	> 99.99%

Test conducted by **Agri-Food & Veterinary Authority of Singapore (AVA)**, yields the above results. BIOVECTROL™ 20EM was diluted at 1:80 and effectiveness against various bacteria were observed following a 45 and 60 minute exposure.

BASIC VERIDICAL ACTIVITY IN ANIMAL FARMS

TEST VIRUS	(%) Reduction after 45 minutes exposure	(%) Reduction after 60 minutes exposure
Classical Swine Fever Virus	≥ 99.9%	≥ 99.9%
Aujeszky Disease Virus	≥99.999%	≥99.999%
Infectious Bronchitis Virus	≥99.999%	≥99.999%
Newcastle Disease Virus	≥99.999%	≥99.999%

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➤ **Insecticide**

The active ingredient Etofenprox is environmentally friendly and is non-poisonous, as characterized by a very high Lethal Dose² (LD₅₀ > 42,800mg/kg) on lab rat (the value is 14 times safer than table salt).

➤ **SAFETY COMARISON AMONG VARIOUS INSECTICIDES**

INSECTICIDE	LD50 mg/kg (Rat)	ODOR	Ch-Esterase Inhibition	IRRITATION
ETOFENPROX	> 40,000	X	X	X
Malathion	1,375	√	√	X
Cyfluthrin	250	√	√	√
Temephos	1,266	√	√	X
Bendiocarb	40 – 156	√	√	X
Permethrin	430 – 470	X	X	Slight
Lamda-cyhalothrin	79	X	X	√
Pirimphos-methyl	2018	√	√	√
Deltamethrin	129	X	X	√
Cypermethrin	250	√	√	Slight
COMPARISON WITH COMPOUNDS FOR DAILY CONSUMPTION				
Common Salt	3,000	X	X	X
Sugar	29,700	X	X	X

The Etofenprox is effective against a broad spectrum of vectors and pests including mosquitoes, flies, cockroaches, triatomine bugs, fleas, etc.

By virtue of biodegradable and photodegradable properties of **BIOVECTROL® 10EM**, long term and repeated applications will not pose any environmental pollution.

² In toxicology, the median lethal dose, LD₅₀ (abbreviation for "lethal dose, 50%") value for a substance is the [dose](#) required to kill half the members of a tested population after a specified test duration. LD₅₀ figures are frequently used as a general indicator of a substance's [acute toxicity](#). A lower LD₅₀ is indicative of increased toxicity



➤ **ACUTE TOXICITY**

METHOD OF ADMINISTRATION	ANIMALS	LD₅₀ (mg/kg)
Oral	Rats	> 42,800
	Mice	> 107,200
	Dogs	> 5,000
Dermal	Rats	> 5,000
	Mice	> 5,000
Subcutaneous	Rats	> 32,160
	Mice	> 53,600
Intraperitoneal	Rats	> 42,880
	Mice	> 53,600

➤ **SUBCUTANEOUS TOXICITY**

Sub-acute dietary studies for 13 weeks on rats and mice did not show any adverse effects.

➤ **CHRONIC TOXICITY, TERATOGENICITY, MULTIGENERATION STUDY AND MUTAGENICITY**

Long term feeding toxicity studies on rats, mice and dogs did not show any adverse effects. Mutagenicity, teratogenicity and three-generation reproduction studies did not show noticeable abnormalities.

➤ **WHO HAZARD CLASSIFICATION**

INSECTICIDE	WHO HAZARD CLASSIFICATION
ETOFENPROX	Table 5
Malathion	Table 4
Cyfluthrin	Table 3
Permethrin	Table 3
Lamda-cyhalothrin	Table 3
Pirimphos-methyl	Table 4
Deltamethrin	Table 3
Cypermethrin	Table 3



➤ **IRRITATION AND INHALATION**

No skin and eye irritation on rabbits.

Inhalation toxicity (Rat) LD₅₀ > 5,900 mg/m³

➤ **SAFE FOR MAMMALS AND ANIMALS**

It provides a safe and effective method of protection as it has no harmful influence to human, avian and non-target organisms.

➤ **PLESANT ODOR, NON-STAINING AND NON-IRRITANT**

Test has shown that **BIOVECTROL® 10EM** being water-based can be sprayed on animal directly without causing any discomfort and duress.

➤ **IMPROVEMENT OF LIVING CONDITIONS**

The reduction in larva and adult vector population (indoor and outdoor) will consequently decrease man-vector contact, thus promoting a healthier and more hygienic living environment.

➤ **FUNDAMENTAL ACTIVITY AGAINST HYGENIC PESTS**

VECTORS / PESTS	STAGE	MEHTOD	LD ₅₀ or LC ₅₀
Culex Pipiens	Larva	Immersion	0.0054 ppm
Culex Quinquefasciatus	Adult	WHO test kit	0.0036 %
Anopheles Albimanus	Adult	WHO test kit	0.009 %
Anopheles Gambiae	Larva	Immersion	0.009 %
Anopheles Quadrimaculatus	Larva	Immersion	0.00085 ppm
Anopheles Stephensi	Larva	Immersion	0.0073 ppm
Aedes Taeniorhynchus	Adult	Aerosol	0.0013 ppm
Musca Domestica	Adult	Topical	0.064 µg / -
Stomoxys Calcitrans	Adult	Topical	0.0093 µg / -
Blattella Germanica	Adult	Topical	0.209 µg / -



➤ **Packaging**

Packed in HPDE bottle, the volume of each bottle is ONE litre. One Carton packaging has 12 bottles and One Pellet packaging has 50 cartons. The dimension of each carton is: 385 x 295 x 280 mm.

➤ **Recommended Dilution Ratio**

Product:	Usage	Recommended Effective Dilution Ratio	Remarks
Biovectrol 10EM	Disinfectant	1:160	
	Against AFS	1:160	For greater protection, can reduce to 1:100
	For general human disinfection usage	1:200	
	Odour control	1:160	
	Insecticide only	1:200	

➤ **Recommended Preparation Procedure for usage:**

1. Shake the Biovectrol 10EM bottle vigorously to ensure a complete mix of the solution due to extended storage of the product.
2. Based on the desired application, pour out the right amount of Biovectrol 10EM product with a measuring cup.
3. Use an empty bottle and add up to 200 - 300 ml of water and pour in the Biovectrol 10EM, close the cap and shake the mixture vigorously for at least 10 seconds to ensure a good mix of the pre-mixed solution.
4. Prepare the corresponding amount of water in a water container based on the desired application, pour the pre-mixed Biovectrol 10EM (Step 3) into the container and stir thoroughly, and the diluted solution is now ready for application
5. Use hand-operated, electrical and/or oil-powered water fogging/spraying equipment to apply the Biovectrol 10EM diluted solution into the air to allow the water mist to float in the air and descent by gravity onto the surface of building. The solution can also be applied by spraying directly onto the wall and floor surfaces, direct the jet closer to the cracks/opening to ensure a deeper penetration and cleaning effects. Make sure we can see visibly that the floor surface is adequately wet, however be mindful to avoid wastage.

6. It is safe to apply the disinfectant Biovectrol 10EM solution on the animals with the animals in the building.
7. Reminder: Do not keep diluted solution for more than a week. It is always best to finish the application of the Biovectrol 10EM diluted solution on the same day of preparation. Keep solution away from direct sunlight and heat; do not keep solution in the car boot during summer.

➤ Suggested Fogging/Spraying Systems

