Introduction to Acaricides

Acaricides are a class of chemicals used to control herbivorous mites. The pest mites have the characteristics of small size, wide range of activities, strong reproductive ability, short life cycle and strong drug resistance, which can seriously reduce the yield of many important economic crops, and are recognized as one of the biological groups that are difficult to control in the world. Acaricides are one of the generalized insecticides. However, since pest mites belong to Arachnida and not to Insecta, the mechanism of action of acaricides is not the same as that of insecticides in the narrow sense.

Spider mite infestation on a tomato crop

Most acaricides have contact or inhalation effects, and often show certain selectivity to different developmental stages of mites. Generally speaking, acaricides have only acaricidal activity but no insecticidal activity. Some varieties have both acaricidal and insecticidal activities, but their main activity is insecticidal, so they cannot be called acaricides. Some acaricides are effective against adult mites, larvae and eggs. Some only kill the adult mites and not the eggs. Others can only kill eggs and are called ovicides. Appropriate acaricides should be selected according to the type of mites and the control period. Acaricides can be used in combination with insecticides and fungicides to treat a variety of pests and mites.

Mechanism of Acaricides

There are many types of acaricides, and the molecular structures of the compounds are complex. Different types of acaricides have different mechanisms, and the same acaricide sometimes has more than one mechanism. According to the mechanism of action, acaricides can be divided

into nerve poisons, mitochondrial respiration inhibitors, growth inhibitors and acaricides with other mechanisms of action.

- **Nerve Poisons**

Most of the current acaricides are nerve poisons. By interfering with the physiological and biochemical processes that destroy the nervous system of mites, it causes tremors, spasms, paralysis, and behavioral changes, which eventually lead to the death of mites.

Specifically, it can be divided into 4 types: (1) Act on ion channels. For example, organochlorine acaricides can prevent the closure of sodium ion channels, resulting in mites neurotoxicity. (2) Inhibit choline-induced conduction. Organophosphorus and carbamate acaricides, mainly by inhibiting acetylcholinesterase in the cholinergic system. (3) Acts on the monoamine excitatory system. Formamidine acaricides can inhibit the activity of monoamine oxidase, resulting in the accumulation of neuramine, which in turn is toxic to nerves. (4) Inhibit γ-aminobutyric acid receptors. For example, avermectin can promote the release of γ-aminobutyric acid, inhibit nerve conduction, and finally activate chloride ion channels, thereby killing mites.

- **Mitochondrial Respiration Inhibitor**

Mitochondrial respiration inhibitors inhibit mitochondrial electron transfer and respiration by destroying mitochondrial respiratory chain complexes, blocking energy conversion, and ultimately leading to the death of mites.

- **Growth Inhibitor**

Growth inhibitors act on the key stages of the growth and development of harmful mites, and can inhibit the synthesis of chitin in the epidermis of mites, inhibit egg laying and prevent eggs from hatching, and can interfere with the molting process of mites.

- **Other Mechanisms**

Quaternary ketoacid acaricides have a new mode of action that inhibits lipid synthesis.

Types of Acaricides

There are many varieties of acaricides, mainly including organochlorine, organosulfur, nitrobenzene, organotin, amidine, and heterocycle. Other types include: sulfur, dinitrophenol, diphenyl alcohol, diphenoxymethane, diphenyl alum, diphenyl sulfonate, sulfinate, diphenyl Base ethers, diphenyl sulfides, quinolines, sulfonamides, phenyl hydroxamates, amidines, benzimidazoles, phenylhydrazones, organotins, antibiotics.

Acaricides and Metabolite Standards

Catalog No.	Name	CAS	Price
BLP-007355	Dimethoate-[d6]	1219794-81-6	Inquiry
BLP-011656	Cyromazine-[13C3]	1808990-94-4	Inquiry

Catalog No.	Name	CAS	Price
BLP-011668	Carbaryl-[d3]	1433961-56-8	Inquiry
BLP-010729	Carbaryl-[d7]	362049-56-7	Inquiry
BLP-003295	Amitraz-[d12]		Inquiry
BLP-000367	Fluralaner-[d4]		Inquiry
BLP-005169	Dimethoate-[13C,d3]		Inquiry
BLP-000339	Amitraz-[d3]		Inquiry
BLP-006323	Chlorfenvinphos-[d10] (Mixture of cis-trans isomers)	1346606-54-9	Inquiry
BLP-005490	Fluralaner-[d2]		Inquiry
BLP-005491	Fluralaner-[d3]		Inquiry
BLP-005492	Fluralaner-[d5]		Inquiry
BLP-007228	Bifenthrin-[d6]		Inquiry
BLP-003995	Rac Bifenthrin-[d5]		Inquiry