

POWDERYCARE[®]
Ampelomyces quisqualis
BioFungicide

APPROVED FOR USE IN ORGANIC AGRICULTURE

Introducing POWDERYCARE[®]

POWDERYCARE[®] is a biological fungicide based on a selected strain of naturally-occurring beneficial fungus *Ampelomyces quisqualis* (DSM 2222) that protects crops from Powdery Mildew caused by several pathogenic species like *Erysiphe spp.*, *Oidium spp.*, *Blumeria spp.*, *Sphaerotheca spp.*, *Leveillula spp.*, *Microsphaera spp.*, *Uncinula spp.*

It is used as an effective foliar spray to combat Powdery Mildew through hyper parasitism of the pathogenic disease causing fungi.

POWDERYCARE[®] contains spores and mycelial fragments of *Ampelomyces quisqualis*. It is formulated as Wettable Powder with CFU count of 2×10^6 / g. POWDERYCARE[®] is approved for use in Organic Agriculture.

A Historical Brief

Ampelomyces quisqualis was first described as a hyperparasite of Powdery mildew in 1870 by De Bary and in 1930 by Emmons. Yarwood in 1932 was the first to attempt using *Ampelomyces quisqualis* spore suspensions as a biocontrol for powdery mildew of Red clover caused by *Erysiphae polygoni*. Odintsova in 1975 obtained some control of apple powdery mildew caused by *Podosphaera leucotricha*. In 1977 Jarvis & Slingsby obtained control of greenhouse cucumber powdery mildew caused by *Sphaerotheca fuliginea*. Several researches are on to continuously assess the biocontrol activity of *Ampelomyces quisqualis*. It was called as *Cicinnobolus cesatii* by De Bary which was claimed to be illegitimate by Rogers in 1959 who named the species as *Ampelomyces quisqualis*.

Mode of Action

Substrate Competition for space and Nutrients: *Ampelomyces quisqualis* competes with the pathogens by colonizing a large area of the target site and competes for the plant substrates and nutrients thereby causing the pathogens to starve - Domino effect.

Mycoparasitism: *Ampelomyces quisqualis* being a hyper parasite penetrates the pathogen and infects it by forming pycnidia (fruiting bodies) within powdery mildew hyphae, conidiophores (specialised spore-producing hyphae) and cleistothecia (closed fruiting bodies of powdery mildews). It derives nutrition from the target pathogenic fungus protoplasm and POWDERYCARE[®] spores multiply inside target pathogenic fungus body and eventually kill the mildew colony.

Enzyme production: *Ampelomyces quisqualis* produces certain enzymes which dissolve the host cell wall and penetrate and inactivate the host defense mechanism. Extracts of the fungal endophyte *Ampelomyces quisqualis* is known to produce 6 natural compounds that exhibit antagonistic properties to their host. They are macrosporin-7-O-sulfate, 3-O-methylalaternin-7-O-sulfate, ampelopyrone, desmethyldiaportinol, desmethyldichlorodiaportin and ampelanol

Method of Application

Foliar Application: Mix 5 g. POWDERYCARE® in 1 L of water and spray
Spray volume depends on the crop canopy.

Target Diseases

Powdery mildew disease.

Crops

POWDERYCARE® is suitable for application on commonly affected crops like Grapes, Wheat , Onions , Apples , Pear , Gourds . Melons, Cucurbits, ornamental flowers and other crops affected by Powdery mildew disease.

Compatibility

POWDERYCARE® is compatible with BioPesticides and not with Chemical Fungicides.

Shelf Life

POWDERYCARE® is stable for a period of 12 months from the date of manufacturing.

Mass Composition

CONSTITUENT	W/W %	FUNCTION
<i>Ampelomyces quisqualis</i> (Spores and Mycelia)	01.00%	Active
Carboxy Methyl Cellulose	00.50%	Inactive
Moisture	08.00% max	Inactive
Carrier Powder – Kaolin	q.s.	Inactive

BIOLOGICAL COMPOSITION

CONSTITUENT	CFU/g.	FORMULATION
<i>Ampelomyces quisqualis</i>	2*10 ⁶	Powder

OTHER FORMULATIONS AVAILABLE

<i>Ampelomyces quisqualis</i> CFU/g	1*10 ⁹	Soluble Powder
<i>Ampilomyces quisqualis</i> CFU/ml	1*10 ⁹	Liquid
<i>Ampilomyces quisqualis</i>		Lyophilized

Free from Salmonella, Shigella , E.Coli

Cautions for handling and use of product

1. Avoid inhalation and skin contact while diluting as there could be spillage / splashes of the product.
2. Mixing and spraying equipment is to be thoroughly rinsed with water and detergent before using the same equipment for spraying other pesticides.
3. Surplus spray solution should not be disposed in crop lands / stagnant water / flowing water where there is a possibility of causing pollution to natural resources.
4. Do not eat / drink / smoke during application.
5. Direct incidence of POWDERYCARE® may cause irritation and therefore it is recommended that the operator should use protective gear viz gloves, apron, mask, eye gear and hood.

Symptoms and Antidotes

Symptoms: Occasional symptoms include head ache and nausea.

Antidote: In the case of ingestion: symptomatic treatment is advised and vomiting may be induced. In the case of contact with Eyes: Flush with water liberally for 20 minutes. In case of skin contact, wash the affected area with plenty of water and soap.

Citations

There are many citations in public domain on effectiveness of *Ampelomyces quisqualis* as a BioFungicide

Commitment to Nature

- POWDERYCARE® is approved for use in organic agriculture.
- POWDERYCARE® can be used as an effective component in IPM programmes, thereby leading to a reduction in use of chemical pesticides/ fungicides and creating a safer environment.
- POWDERYCARE® does not lead to residue problems and doesn't cause resistance or resurgence problems.

Benefits from POWDERYCARE®

- POWDERYCARE® effectively controls Powdery mildew one of the most economically important diseases in economic crops and plantations like grapes, roses, cucurbits, melons and vegetables.

- Pathogenic fungi load reduction leads to improved plant health and thereby increased crop productivity.
- POWDERYCARE[®] is earthworm friendly , pet friendly , eco friendly and infant friendly

