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RESEARCH ARTICLE

Growth Pattern of *Beauveria bassiana* in Different Eco-friendly Media

Sonam Yadav[1]*, Prakash Vaghasiya[2], Megha Thakar[2]

[1]*Department Microbiology, Parul University, Vadodara, Gujarat, India,* [2]*Research Section, Vise Innovative Solution Enterprise Private Limited, Surat, Gujarat, India*

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ABSTRACT

Beauveria bassiana belongs to the class Deuteromycetes which is one of the important disease-causing biocontrol agents in insects. *B. bassiana,* formerly known as Botrytis bassiana (Balsamo), is a widely distributed soil inhabiting fungus. *B. bassiana* is also known to be best biocontrol agent against larval stage of the silkworm. *B. bassiana* is categorized as a white muscardine fungus due to the white color of sporulating colonies. It is a type of biopesticide which is based on entomopathogenic fungi which are often considerable scope as plant protection agents against several pathogens and insects including whiteflies, aphids, thrips, grasshoppers, and certain types of beetles. The present study deals with the use of different media such as coconut media, jaggery media, nutrient media, potato dextrose media, Sabouraud dextrose media, and molasses media.

Keywords: *Beauveria bassiana,* entomopathogenic fungus, molasses media

INRODUCTION

Entomopathogenic fungi are biological control agents for insect species. These fungal pathogens play an imperial in insect population dynamics making it the earliest insect pests control agents. It is a natural conditions, in which pathogens are a frequent and often cause natural mortalities of insect populations.[1-5]

Beauveria bassiana has been produced on different solid media such as Sabouraud dextrose agar (SDA) and potato dextrose agar (PDA) and many other different types of media. It is a fungus which grows naturally in soils, it acts as a parasite on various arthropod species. It enters the body of the host insect through food or in contact with the host cuticle and starts to reproduce inside the insect body which causes paralysis to the host insects and kills the insect within 3–6 days.

***Corresponding Author:**
Sonam Yadav
E-mail: sonamyadav638@gmail.com

B. bassiana are used as a biological insect to control a number of pests such as whiteflies and many other insects.

B. bassiana is a wide range of arthropod hosts. In different strains vary in their host ranges, some having rather narrow ranges, such as strain Bba 5653 that is very virulent to the larvae of the diamondback moth and kills only few other types of caterpillars. Some strains do have a wide host range and should, therefore, be considered nonselective biological insecticides. These should not be applied to flowers visited by pollinating insects.[6-10]

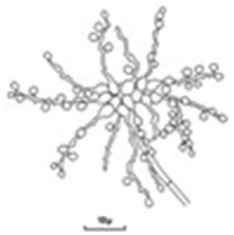
Known targets include beetles, aphids, whiteflies, aphids, mealybugs, and grasshoppers [Table 1].[11-14]

MATERIALS AND METHODS

Procedure

A weight 3.25 g of SDA and 1.2 g of PDA were suspended in 50 ml of sterile distilled water and mixed completely to dissolve the media. After

Table 1: Targets according to different media.

Picture	Title	Caption	Copyright
	Natural enemy	*Beauveria bassiana* (white muscardine fungus); natural enemy. Fungus on Cicadulina leafhopper	©James Litsinger
	Natural enemy	*Beauveria bassiana* (white muscardine fungus); natural enemy. *Basilepta* spp. beetles infected with *Beauveria bassiana* in laboratory conditions	©S. Varadarasan
	Line drawing	*Beauveria bassiana* (white muscardine fungus). Note scale bar	©Dave Minter/CABI BioScience
	Conidiophores	*Beauveria bassiana* (white muscardine fungus); conidiophores 1–2 µm wide, bearing groups of clustered conidiogenous cells, 3–6×3–5 µm, which may branch to give rise to further globose or flask-shaped conidiogenous cells	©CABI BioScience
	Natural enemy	Rhynchophorus ferrugineus (red palm weevil); natural enemy. Dorsal and ventral views of *B. bassiana,* sporulating on the cadaver of a red palm weevil	©Abid Hussein

that autoclave the media at 121°C for 15 min. Autoclaved agar medium was then poured in the sterile Petri dishes and allowed to solidify in a laminar flow for 45 min. *B. bassiana* culture was inoculated to the medium; afterward, the plates were incubated at 26 ± 2°C for 1 week. A lawn growth was observed on 7 days, indicating that the full growth of spores and mycelia of *B. bassiana* 0.2 g of mycilia was transferred from the 8-day-old *B. bassiana* to get pure culture contain 5 ml spores in water with 0.1% Tween 80 and Tween 20 spread evenly spread on SDA and PDA and incubated at 35°C. The fungi were allowed to grow in the SDA media at room temperature. Similarly, the plates were prepared of molasses agar and PDA and coconut water agar [Table 2].

Table 2: Mycelial weight and spore loaded of fungus multiplied in different media

Media	Mycelial weight in gram	Spore load×10^8 CFU/ml of medium
PDA	0.5	0.28
SDA	0.5	0.18
Coconut media	0.5	0.20
Molasses media	0.5	0.22
Sorghum grain	0.5	0.26

SDA: Sabouraud dextrose agar, PDA: Potato dextrose agar

RESULTS AND DISCUSSION

Different types of media were used to observe the growth of *B. bassiana.* The growth takes place rapidly in molasses media and PDA medium. The growth takes around 24–31 days to cover the whole flask of 500 ml media.

Highest and most effective biomass growth was observed when it was incubated at the temperature of 26 ± 2°C. The media that showed the higher density of fungal spore were PDA while SDA showed slightly lower density of spores followed by molasses, but the coconut media showed lowest spore count as compared to the mycelial weight.
Thus, PDA shows to be the best media for the growth of *B. bassiana,* but in reference to cost, molasses prove to be the effective media that will not cost much for needful produce.

CONCLUSION

B. bassiana is a type of biopesticide which is based on entomopathogenic fungi which are often considerable scope as plant protection agents against several pathogens and insects including whiteflies, aphids, thrips, grasshoppers, and certain types of beetles. The present study deals with the use of different media such as coconut media, jiggery media, nutrient media, potato dextrose media, Sabouraud dextrose media, and molasses media.

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