

## Ecological Note on *Sphaerobolus jaysukhianus* (Vasava, Patel & Rajput, 2020): First Report from Madhya Pradesh, India

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### ABSTRACT

This note reports the first occurrence of *Sphaerobolus jaysukhianus* from Bhopal district, Madhya Pradesh. Commonly known as shotgun or artillery fungus, *Sphaerobolus* species are globally recognized for their unique spore discharge mechanism and their association with decaying organic matter. The specimen was observed on decomposing cattle dung near the Kalapani village (23.083004, 77.394634). This discovery adds to the known distribution of the species in India and addition in to Madhya Pradesh biodiversity and highlights the ecological significance of semi-natural habitats and dung-based microhabitats in fungal diversity.

**Key words:** Artillery Fungus, New Records, Ecological Significance, Kalapani, Bhopal, Madhya Pradesh

### INTRODUCTION

The family Geastraceae includes the fungus *Sphaerobolus*. Species that are commonly referred to as "shotgun fungus," "artillery fungus," or "cannonball fungus" release their spores with a powerful boom. Spore sacs that have been released are sticky and tend to stick firmly to any surface they come into contact. *Sphaerobolus* was initially placed in the class Gasteromycetes under different orders due to the morphology of its basidioma and passive spore dispersal mechanism (Hibbett 1997; Sakes et al. 2016).

Artillery fungi were first described under genus *Carpobolus*, which means "fruiting-body thrower" in Latin (Micheli 1729). Later, many scientists documented the development of artillery fungi morphology, spore shooting mechanism than after the artillery fungi were placed in the genus *Sphaerobolus*. (Fischer1884) (Buller 1909) (Walker 1927).

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*Sphaerobolus* has been recorded in Australia (Aplin 1961), various parts of the United States (Ellis & Ellis 1990) (Pegler 1996), Europe (Calonge1998),

Africa (Calonge & Daniels 1998), and India (Butler & Bisby 1931). In India, five species of the genus *Sphaerobolus* have been reported (Vasava et al. 2020) (Sarsavan & Sharma 2024).

### MATERIALS AND METHODS

A field survey was conducted on July 27, 2025, near the Kalapani village (23.083004, 77.394634) in Raisen district, Madhya Pradesh, during the monsoon season. The area consists of semi-natural grasslands, riverine vegetation, and scattered patches of cattle grazing. The fungal fruiting bodies were observed growing on decaying cattle dung in a moist microhabitat. The species was identified based on morphological comparison with established keys and literature for *Sphaerobolus* species (Vasava et al. 2020).

### RESULTS AND DISCUSSION

During the survey, the opportunistic survey in which we came across the cattle dung showing toothed or star-like small structures. The observed specimen was confirmed to be *Sphaerobolus jaysukhianus* based on its characteristic small, round fruiting bodies with highly reflective peridioles and matured peridioles ejected. The fruiting bodies were embedded in decomposing cattle dung, found in a moist, shaded riverine patch.

This marks the first report of this species from Bhopal district, expanding its known geographical range within India.

The presence of *Sphaerobolus jaysukhianus* in Bhopal underscores the ecological importance of dung-based microhabitats and semi-wild riverine zone as reservoirs of fungal diversity. This fungus plays an

important role in nutrient cycling and decomposition. The specific association with cattle dung, moist and near riparian zones, may also suggest a symbiotic ecological niche. The ability to grow on carbon-rich sources for enzyme production is exploited in the bioremediation of xenobiotic compounds (Geml et al. 2005)

Moreover, this finding supports the need to study underexplored fungal groups in the central Indian landscape, especially in areas that lie at the interface of natural and agro-pastoral landscapes.



**Figure 1.** *Sphaerobolus jaysukhianus* with basidiocarp

## CONCLUSION

This record contributes to the biogeographical knowledge of fungal diversity in Madhya Pradesh. The documentation of this fungus in the Bhopal district is not only taxonomically significant but also highlights the value of simple ecological observations in contributing to the broader understanding of microbial diversity in overlooked habitats.

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