Conclusion
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A total of 49 isolates including 13 strains belonging to saprophytic Entomophthorales were screened by using different methods as chitin flake colonization, plate screening and agar well diffusion for their chitinolytic activity. Out of which, 18 isolates produced zones of clearance in the plate assays. Of these, all studied isolates belonging to saprophytic Entomophthorales group showed chitinolytic activity, which were further studied quantitatively. A Basidiobolus sp. (NFCCI 1922) having good chitinase activity was isolated from frog excreta and identified based on molecular tools as Basidiobolus ranarum. This isolate having the innate property of chitin hydrolysis prompted us to further take up this culture for study.

After optimization, the maximum chitinase activity, 3.47 Uml⁻¹ was obtained under following conditions: 1.5% colloidal chitin, 0.125% lactose, 0.025% malt extract, 0.075% yeast extract and 0.075% peptone in production medium of initial pH 8.0 containing inoculum density of 3x10⁶ cfu/flask (15% v/v) at incubation temperature of 25°C and 150 rpm for 24 h, which was 7.71 folds than the basal medium.

Different methods viz. dual culture technique, in vitro fungal mycelia degradation studies and agar well diffusion were used to study the biocontrol potential of B. ranarum and its chitinase against a variety of plant pathogenic fungi viz. Rhizoctonia solani, Fusarium solani, Alternaria alternata, Aspergillus niger etc. Dried fungal biomass was also utilized by the organism under study for N-acetyl D-glucosamine production. Basidiobolus showed antagonistic activity against most of the tested pathogens.

Purification of chitinase from B. ranarum upto 3.21 folds was achieved with 22.76% recovery. The approximate molecular weight of enzyme on SDS-PAGE was found to be approximately 45 kDa. It showed highest affinity towards colloidal chitin followed by crude and fish chitin. Kₘ values for colloidal chitin, crude chitin and fish chitin was 2.212, 1.76, 21.78 µm min⁻¹ and Vₘₐₓ values were 1.8, 1.09 and 3.8 x 10⁻² µg ml⁻¹ min⁻¹ respectively. The enzyme is stable in the pH range of 5.0-6.5 and
temperature range from 40 to 55°C giving maximum activity at pH 5.5 and temperature 55°C. SDS showed complete inhibition.

Based on the above studies, we can conclude that this is the first systematic study of chitinase profile and antifungal activity from *Basidiobolus ranarum* so far. The organism was found to secrete different enzymes including protease, p-nitrophenyl N-acetyl β-D glucosaminidase and chitosanase along with chitinase, which is an indication of the natural ability of degrading chitin. Which was confirmed by utilization of fungal mycelia by *B. ranarum* as a carbon source for the production of NAG thus suggesting possible uses in the related areas of biocontrol and recycling of the chitinous waste.