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Title:	In Vitro Studies Reveal that Pseudomonas, from Odontotermes obesus Colonies, can Function as a Defensive Mutualist as it Prevents the Weedy Fungus While Keeping the Crop Fungus Unaffected
Authors:	Agarwal, Renuka (/jspui/browse?type=author&value=Agarwal%2C+Renuka) Gupta, Manisha (/jspui/browse?type=author&value=Gupta%2C+Manisha) Antony, Abin (/jspui/browse?type=author&value=Antony%2C+Abin)
Keywords:	Vitro Studies Reveal Pseudomonas Odontotermes obesus Colonies Mutualist
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Citation:	Microbial Ecology.
Abstract:	Insects that farm monocultures of fungi are canonical examples of nutritional symbiosis as well as independent evolution of agriculture in non-human animals. But just like in human agriculture, these fungal crops face constant threat of invasion by weeds which, if unchecked, take over the crop fungus. In fungus-growing termites, the crop fungus (Termitomyces) faces such challenges from the weedy fungus Pseudoxylaria. The mechanism by which Pseudoxylaria is suppressed is not known. However, evidence suggests that some bacterial secondary symbionts can serve as defensive mutualists by preventing the growth of Pseudoxylaria. However, such secondary symbionts must possess the dual, yet contrasting, capabilities of suppressing the weedy fungus while keeping the growth of the crop fungus unaffected. This study describes the isolation, identification, and culture-dependent estimation of the roles of several such putative defensive mutualists from the colonies of the wide-spread fungus-growing termite from India, Odontotermes obesus. From the 38 bacterial cultures tested, a strain of Pseudomonas showed significantly greater suppression of the weedy fungus than the crop fungus. Moreover, a 16S rRNA pan-microbiome survey, using the Nanopore platform, revealed Pseudomonas to be a part of the core microbiota of O. obesus. A meta-analysis of microbiota composition across different species of Odontotermes also confirms the widespread prevalence of Pseudomonas within this termite. These lines of evidence indicate that Pseudomonas could be playing the role of defensive mutualist within Odontotermes.
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