

# MICROBIOLOGY AND INFECTIOUS DISEASES

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## A phenazine pigment obtained from *Pseudomonas aeruginosa* as a potent antifungal agent

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Mycotoxins produced by various fungi are secondary metabolites that have adverse effects on humans, animals and crops. *Aspergillus ochraceus* is among the moulds considered to be more pathogenic, due to their production of toxins such as Ochratoxin A and B. Nowadays, other than using chemical antifungal agents, biological control of such fungal infection is a newly introduced strategy. In this study, the cross streak and agar well diffusion methods were carried out to determine the antifungal activity of pyocyanin. Extraction and purification of the pigment was done by chloroform extraction method and column chromatography. UV-visible absorption spectrum, Fourier Transform Infrared Spectrophotometry (FT-IR) and Thin-layer Chromatography (TLC) were used to characterize the pigment and its components. In cross streak method, inhibition of *Aspergillus ochraceus* by *Pseudomonas aeruginosa* was visually unambiguous and in quantitative assay, 72% inhibition by the crude extract of isolate *Pseudomonas aeruginosa* (designated code as PU8) was recorded against the fungi. Later on, the crude extract was purified and characterized. The data of UV spectrophotometry, FT-IR, thin layer chromatography and microscopic analysis proved that the crude extract contained pyocyanin as a potent antifungal phenazine pigment. Adverse effects of chemical fungicides supported the need for substitute fungal control ways. Fortunately, our study found *Pseudomonas aeruginosa* can produce a phenazine pigment (pyocyanin) as a potent antifungal agent against *Aspergillus ochraceus*. To the best of our knowledge, this is the first report of such inhibition. Adverse effect of chemical fungicides supported the need for such kind of substitute fungal controlling ways.

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