

**ANTIFUNGAL POTENTIAL OF LACTIC ACID BACTERIA
AGAINST ANTHRACNOSE PATHOGEN, *Colletotrichum capsici*
OF CHILLI**

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Colletotrichum capsici are ubiquitous fungal pathogens that cause anthracnose disease of chilli plant. Although chemical fungicide can be used to manage the disease, excessive use of the fungicide can lead to development of resistance fungicide as well as human health concern. Lactic acid bacteria (LAB) are gram positive, mostly anaerobic, non-sporulating and acid-tolerant bacteria which produce antifungal compounds. Many LAB strains have been isolated from fermented foods, fresh fruits and vegetables, but very limited study is done on antifungal potential of LAB isolated from soils. This study aimed to isolate and identify LAB from soil in agricultural fields and evaluate their antifungal activities under laboratory and glasshouse conditions. Laboratory tests showed that a total of seven LAB strains out of 40 putative LAB were successfully isolated from sandy clay loam soil and sandy loam soil collected from respective rice fields and Roselle cultivation areas using M17 agar and Tomato juice agar under aerobic condition and identified as *Lactococcus lactis* subspecies *lactis* through molecular techniques. All seven strains of *Lc. lactis* subsp. *lactis* exhibited antifungal activities against *C. capsici* with minimum inhibition concentrations at 10% (v/v) and inhibition zones which ranged

from 6.03 mm to 6.30 mm. A selected strain of *Lc. lactis* subsp. *lactis* (strain L 38-1) was subsequently sprayed at a concentration of 100% (v/v) on fruits of three chilli varieties, namely *Capsicum annuum* var. Longum, *Capsicum annuum* var. Kulai and *Capsicum frutescens* L. before being inoculated with spore suspension of *C. capsici* or distilled water under controlled environment. The fruits subjected to distilled water before *C. capsici* inoculation was served as negative control. Physico-chemical analysis was carried out seven days after treatment. The results revealed that the chroma, hue angle, lightness, fruit firmness and total soluble solid of the fruits were not affected as compared to negative control. However, the lesion area of *Lc. lactis* subsp. *lactis*-treated *C. annuum* var. Longum fruits were twice smaller (22 mm²) when compared to negative control (42 mm²). Although *Lc. lactis* subsp. *lactis* treatment could inhibit *C. capsici* infection on *C. annuum* var. Kulai, it also caused lesion (31 mm²) on the fruits. Whereas, *C. frutescens* was tolerant to *C. capsici* infection. This finding suggests that *Lc. lactis* subsp. *lactis* isolated from soil has potential to act as antifungal agent against *C. capsici* depending on variety of chilli.