

Identification and Characterization of *Enterobacter cloacae*, New Soft Rot Causing Pathogen of Radish in India

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Abstract : Bacterial soft rot is one of the most often seen diseases in many plant species globally, resulting in considerable yield loss. Radish roots with dark water-soaked lesions, maceration of tissue, and a foul odour were collected in the Kolar region, India. Two isolates were obtained from rotted samples that demonstrated morphologically unpigmented, white mucoid convex colonies on nutrient agar medium. The isolated bacteria (RDH1 and RDH3) were gram-negative, rod-shaped bacteria with biochemically distinct characteristics similar to the type culture of *Enterobacter cloacae* ATCC13047 and Bergy's handbook of determinative bacteriology. The 16s rRNA gene was used to identify *Enterobacter* species. On carrot, potato, tomato, chilli, bell pepper, knolkhol, cauliflower, cabbage, and cucumber slices, the Koch's postulates were fulfilled, and the pathogen was also pathogenic on radish, cauliflower, and cabbage seedlings were grown in a glasshouse. After 36 hours, both isolates exhibited a hypersensitive sensitivity to *Nicotianatabacum*. Semi-quantitative analysis revealed that cell wall degrading enzymes (CWDEs) such as pectin lyase, polygalacturonase, and cellulase ($p=1.4e09$) contributed to pathogenicity, whereas isolates produced biofilms ($p=4.3e-11$) that help in host adhesion. This is the first report in India of radish soft rot caused by *E. cloacae*.

Keywords : soft rot, *enterobacter cloacae*, 16S rRNA, *nicotiana tabacum*, and pathogenicity

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