Abstract

The exploration of bacterial entry points into plants has been focused on natural openings such as stomata, lenticels, and plasmodesmata. However, the potential role of lateral root (LR) gaps as an entry portal for bacteria remains largely unexplored. This study attempts to investigate the correlation between lateral root number and bacterial colonization, with implications for human health through food poisoning caused by ingesting contaminated raw vegetables. *Arabidopsis thaliana* and non-pathogenic *Escherichia coli* were utilized as model organisms for plants and bacteria, respectively. The manipulation of lateral root number was conducted using the Col-0 (wild type) as the control and three transgenic lines: *plt 3,5,7* (a mutant with less LR emergence) and two overexpression lines, *PME5*OE and *PMEI3*OE (changes the pectin methyl esterification status that changes the LR emergence level). The study revealed an observable trend between the number of lateral root numbers and bacterial colonies, shedding light on a potential entry route for bacterial colonization within plants. Understanding the significance of lateral root gaps may hold the key to developing strategies to prevent bacterial contamination in agricultural practices and safeguarding human health.

Keywords: *Arabidopsis thaliana,* Plant-microbe interaction, Lateral root.