

Abstract:

Agrobacterium tumefaciens is a soil bacterium that can transfer DNA to plant cells. If a plant is wounded, the bacteria infect the wound and transfer a segment of DNA to host cells to induce formation of crown gall tumors. Exopolysaccharides play a role in producing a biofilm that helps protect *A. tumefaciens* from plant hosts' defense mechanisms such as hydrogen peroxide. Our research examines whether certain exopolysaccharides are required for bacterial growth in the presence of wounded plant roots, transfer of DNA, and tumor formation. Some *A. tumefaciens* mutants that fail to produce certain exopolysaccharides show reduced or no crown gall tumor formation and fail to transfer of DNA. The bacterial mutants unable to make cellulose or β -1, 2-D glucan exopolysaccharides fail to induce tumor formation and transfer DNA. These data suggest that cellulose and β -1, 2-D glucan exopolysaccharides are important for tumor formation and DNA transfer. However, not all exopolysaccharides matter for virulence and transient transformation. The bacterial mutants unable to make succinoglycan, curdlan, and the unipolar polysaccharide induce crown gall tumor formation and exhibit DNA transfer. These results suggest that succinoglycan and the unipolar polysaccharide are not important for virulence, induction of crown gall tumor formation, nor transient transformation of *A. tumefaciens*.