

The authors investigated the effect of lipopolysaccharide (LPS) outer membrane of gram-negative bacteria of the genus *Azospirillum brasilense* Sp245 on mitotic activity of meristematic cells of root of wheat seedlings. The effect of this major component of the cell surface of *Azospirillum* compared with the effects of living bacteria. The results were compared with the effects of LPS and whole cells of *Escherichia coli* K12 and *Rhizobium leguminosarum* 249. The results showed that LPS of azospirill a positive effect on the functional activity of meristematic cells of the root, as well as on physiological and morphological parameters of wheat seedlings. This action was comparable to the effect of live bacteria. The obtained results give grounds to consider LPS as one of the active components of the cell surface azospirill, not only determining their contact interaction with the roots of wheat, but also involved in the induction of responses of plants to these interactions.