

## Abstract

Lipopolysaccharides are composed of covalently bound saccharides. They are a characteristic component of the cell wall of gram-negative bacteria. They are the cause of severe sepsis in humans and complications in human medicine.

Lipopolysaccharides are a constant part of the infections of gram-negative bacteria. We expect an evolutionarily conserved non-specific immune response and protection. The question is whether there is an immune response in the model organism *Caenorhabditis elegans*. If so, what mechanism is controlled and regulated.

We submitted lipopolysaccharides from the bacteria *Pseudomonas aeruginosa* with the bacteria *Escherichia coli* OP50 and observed the influence of lipopolysaccharides on the expression of selected genes. We examined metabolism and development. We have shown the influence of lipopolysaccharides on gene expression of C-type lectine *clec-60* a *clec-71*, nextna *lys-5*, *hsp-60* a *F44G.3.2.1* genes. We incubated *Caenorhabditis elegans* on some components of lipopolysaccharide. We found regulation of these selected genes with hydrophobic components of lipopolysaccharide, lipid A. We did not observe regulation with saccharide components of lipopolysaccharide, glucose and galatose.

The metabolism of lipids had changed. We demonstrated a reduction of neutral lipids and changes in the representation of some fatty acids. The development of this organism is dependent on an amount of endotoxin. With an increasing concentration of lipopolysaccharide vitality changes, development slows, there are defects in the morphology of the organism and some individuals die within a short time.

Our experiments confirmed the importance of the biologically active molecule, lipopolysaccharide, which is commonly found in gram-negative bacteria and is a part of other living systems.

## Key words:

lipopolysaccharide

*Caenorhabditis elegans*

nonspecific immunity

gene expression

metabolism of lipids

development