Abstract

The emergence of phenotypically heterogeneous individuals within an isogenic bacterial population is considered to be an important adaptation to the host environment. It allows survival of some bacterial subpopulations under diverse stress conditions caused by the host immune system, the emergence of a "division of labor" and cooperation between individual bacteria. Bacteria of the genus *Salmonella* are important pathogens in humans and livestock. Many of the key virulence factors of *Salmonella* are heterogeneously expressed. The phenotypic diversity of individual bacteria allows certain individuals to escape the host's immune system and ensure that the gene pool is preserved to future generations. In case when change in conditions causes complete extinction of part of the *Salmonella* population from the environment, the remaining individuals are able to restore the size of the population and phenotypic diversity, after overcoming unfavourable conditions. This work summarises the knowledge about heterogeneity of expression of virulence factors of *Salmonella* and the characteristics of individual subpopulations in different environmental conditions.

Keywords: *Salmonella*, heterogeneity, virulence factors, bet-hedging, division-of-labor, bacterial subpopulations.