Molecular Genetics, Microbiology and Virology 2012 vol.27 N1, pages 28-32

Induction of NO synthesis in lactobacilli under stress conditions

Smolentseva O., Yarullina D., Ilinskaya O.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

It is shown that activation of nitric oxide (NO) biosynthesis in Lactobacillus plantarum 8P-A3 cells takes place under strong stress, which leads to a considerable decrease in the bacterial cell viability. Such stress conditions are heating up to 70 or 80°C, prolonged cultivation, and the toxic effect of hexylresorcinol. Other factors, such as heating up to 60°C, 50 μg/mL homoserine lactone, and Bacillus intermedius ribonuclease (binase) in concentrations up to 300 μg/mL not causing cell death, do not induce NO synthesis. The activation of NO biosynthesis in response to stress stimulation testifies to the universality of key mechanisms of stress response in cells differing in the level of their organization, as well as the important role of nitric oxide in them. © 2012 Allerton Press, Inc.

http://dx.doi.org/10.3103/S0891416812010089

Keywords

hexylresorcinol, high-temperature stress, homoserine lactone, Lactobacillus plantarum, nitric oxide (NO), ribonuclease Bacillus intermedius 7P (binase)