Effect of Age on the Fatty Acid Composition of the Bacillus subtilis PO270 Isolated from Wheat Rhizosphere

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Abstract

The changes of the composition of growing medium and the fatty acid composition of Bacillus subtilis PO270, a bacterium isolated from the wheat rhizosphere, was evaluated during different phases of growth. During growth alkalinity reaction of medium was observed and in late stationary phase of growth the release of proteins and phenolic acids from cells was observed. Twenty six fatty acids were detected. The most prominent fatty acids found in bacterial cells were 15:0 a, 15:0 i, 17:0 a and 17:0 i. Depending of a phase of bacterial growth, their contents varied from 86.5 to 88.9% of total fatty acids. The remaining fatty acids identified, including regular saturated and monounsaturated as well as iso- and anteiso-branched, 2- and 3-hydroxylated, cyclopropane and odd-numbered derivatives, were present in minor amounts. We have demonstrated that the fatty acid composition of this bacterium changes greatly in different growth phases. These structural changes represent rearrangement of membranes, which keeps the bacterial cell fit during growth and counteracts the effects of the changing environment.

Key words: Bacillus subtilis, fatty acids

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