

Molecular and Phylogenetic Analysis of Pyridoxal Phosphate-Dependent Acyltransferase of *Exiguobacterium acetylicum*

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Z. Naturforsch. **64c**, 891–898 (2009); received June 15/July 27, 2009

The pyridoxal-5'-phosphate (PLP)-dependent family of enzymes is a very diverse group of proteins that metabolize small molecules like amino acids and sugars, and synthesize cofactors for other metabolic pathways through transamination, decarboxylation, racemization, and substitution reactions. In this study we employed degenerated primer-based PCR amplification, using genomic DNA isolated from the soil bacterium *Exiguobacterium acetylicum* strain SN as template. We revealed the presence of a PLP-dependent family of enzymes, such as PLP-dependent acyltransferase, and similarity to 8-amino-7-oxononoate synthase. Sequencing analysis and multiple alignment of the thymidine-adenine-cloned PCR amplicon revealed PLP-dependent family enzymes with specific conferring codes and consensus amino acid residues specific to this group of functional proteins. Amino acid residues common to the majority of PLP-dependent enzymes were also revealed by the Lasergene MegAlign software. A phylogenetic tree was constructed. Its analysis revealed a close relationship of *E. acetylicum* to other bacteria isolated from extreme environments suggesting similarities in anabolic adaptability and evolutionary development.

Key words: *Exiguobacterium*, Acyltransferase, Phylogenetics