

CHARAKTERYSTYKA, IDENTYFIKACJA, RÓŻNICOWANIE I TAKSONOMIA BAKTERYJNYCH PATOGENÓW ROŚLIN Z RODZAJU *ERWINIA*

Małgorzata Waleron, Krzysztof Waleron
Ewa Łojkowska

1. Wprowadzenie. 2. Charakterystyka bakterii z rodzaju *Erwinia*. 3. Wykrywanie, identyfikacja i różnicowanie bakterii z rodzaju *Erwinia*. 3.1. Testy biochemiczno-fizjologiczne 3.2. Testy serologiczne. 3.3. Analiza kwasów tłuszczowych. 3.4. Analiza restrykcyjna chromosomalnego DNA. 3.5. Hybrydyzacja kwasów nukleinowych. 3.6. Reakcja łańcuchowa polimerazy (PCR) i jej modyfikacje. 3.7. Reakcja łańcuchowa ligazy (LCR). 3.8. Sekwencjonowanie DNA. 4. Taksonomia bakterii z rodzaju *Erwinia*. 5. Podsumowanie

Characteristics, identification, differentiation and taxonomy of plant pathogenic bacteria from the genus *Erwinia*

Abstract: The genus *Erwinia*, which was proposed in 1917, consists of several species of gram-negative, non-spore-forming, peritrichous, fermentative rod-shaped bacteria and belongs to the family *Enterobacteriaceae*. This genus was proposed for plant-associated bacteria that are pathogens, saprophytes and epiphytes. The majority of species of the genus *Erwinia* are identified by biochemical features. Only for species like *Erwinia amylovora*, *E. carotovora* subsp. *atroseptica*, *E. carotovora* subsp. *carotovora*, *E. chrysanthemi* and *E. stewarda* causing the highest losses of fruit or vegetables the serological and molecular tools for detection, identification and differentiation were developed.

Although taxonomic structure of the genus *Erwinia* has been proven using both phenotypic and genotypic data, the taxonomic position of this genus is discussed. The difficulties are based mainly on the heterogeneity of the genus *Erwinia* and the unclear relationships among its members and with other taxa of the *Enterobacteriaceae*.

Several independent intensive studies of 16S rDNA sequences aimed to resolve the taxonomic relationships of different species and groups of the *Erwinia* genus and their position within the *Enterobacteriaceae*, but they gave incoherent results. Some authors proposed that the genus *Erwinia* should be divided into four new genera, namely *Erwinia*, *Pectobacterium*, *Pantoea*, and *Brenneria*, while others suggested that the genera *Pectobacterium* and *Brenneria* should be grouped together. Also the phylogenetic position of phytopathogens within the *Enterobacteriaceae* is problematic. The results of some authors indicated that species belonging into former *Erwinia* genus form one group well separated from other genera from *Enterobacteriaceae* family. The other scientists obtained different results indicating that among the genera from former *Erwinia* genus, there are also other genera from *Enterobacteriaceae* family.

1. Introduction. 2. Characteristic of *Erwinia* genus. 3. Detection, identification and differentiation of bacteria from *Erwinia* genus. 3.1. Biochemical and physiological tests. 3.2. Serological tests. 3.3. Analysis of free fatty acids composition. 3.4. Restriction fragment length polymorphism of chromosomal DNA. 3.5. Nucleic acids hybridisation. 3.6. Polymerase Chain Reaction (PCR) based DNA fingerprinting. 3.7. Ligase Chain Reaction (LCR). 3.8. DNA sequencing. 4. Taxonomy of the *Erwinia* genus. 5. Summary

Międzyuczelniany Wydział Biotechnologii UG i AMG
Katedra Biotechnologii
Zakład Ochrony i Biotechnologii Roślin
ul. Kładki 24, 80-822 Gdańsk
tel. 0 58 320 22 48, 0 58 301 22 41 wew. 345
lojkowsk@biotech.univ.gda.pl

Wpłynęło w listopadzie 2003 r.