

Isolation and characterization of pectolytic bacterial pathogens infecting potatoes in Nakuru County, Kenya.

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ABSTRACT

AIMS:

Isolation and characterization of pectolytic bacteria associated with soft rot disease of potatoes in Nakuru, Kenya, to provide the basis for the development of disease control measures.

METHODS AND RESULTS:

Potato tubers showing symptoms of soft rot were collected from different farms in Molo and Mau Narok regions within Nakuru county. Isolation was done using crystal violet pectate medium (CVPM). Out of the 71 isolates that showed growth on CVPM, pathogenicity tests revealed that 36 of them had the ability to macerate tissues of potato tubers. All the isolates yielded a fragment of approximately 1500 bp after 16S rDNA amplification. Using the BIOLOG microbial identification system, 20 bacterial isolates were identified as *Pectobacterium carotovorum* subsp. *carotovorum*, 7 were *Pseudomonas fluorescens* B while 9 were *Ps. fluorescens* A. Y1/Y2 primers successfully amplified pectate lyase-encoding (*pel*) gene, approximately 434 bp, in all the 20 *P. carotovorum* species. The virulence of the isolated strains to cause disease, according to pectinolytic tests, varied with change in incubation temperature of the test samples. *Pectobacterium carotovorum* strains were the most virulent at 30°C while disease severity due to infection by *Ps. fluorescens* A strains was high at 20°C compared to the other isolates.

CONCLUSION:

This study reveals the identity of pectolytic bacterial species from two genera, *Pectobacterium* and *Pseudomonas*, as causative agents of potato soft rot in Nakuru, Kenya.

SIGNIFICANCE AND IMPACT OF THE STUDY:

Research findings from this study will aid in developing suitable risk mitigation methods for adoption by farmers to prevent losses due to soft rot.

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