



DIVERSITY OF MICROORGANISMS CAUSING SOFT ROT DISEASE OF FRUITS AND VEGETABLES MARKETED IN TAMANGHASSET (ALGERIA)

Asmaa Benaissa^{1,2✉}. Nadine Chahrazade Djellout². Khadidja Baika². Hafsa Bamebarek², Merdia Bestami²

¹*Laboratory of Plant Physiology, Department of Biology and Physiology of Organisms, Faculty of Biological Sciences, University of Sciences and Technologies of Houari Boumediene - El-Alia BP 16011 Bab Ezzouar Algiers, Algeria*

²*Department of Biology, Faculty of Sciences and Technology, University of Amine Elokkal ElHadj Moussa Eg. Akhamoukh, 11039 Sersouf, Tamanrasset, Algeria*

[✉]benaissa.asmaa@yahoo.fr

<https://doi.org/10.34302/crpjfst/2021.13.3.8>

Article history:

Received:

25 December 2020

Accepted:

2 July 2021

Keywords:

Commercial fruit and vegetables; soft rot; microorganisms; PCWDE; Tamanghasset.

ABSTRACT

The nutritional richness of fruit and vegetables makes them an ideal target for microorganisms, causing in particular soft rot. The aim of this work is therefore to isolate, characterize and identify these microorganisms, based on random sampling of rotten fruits and vegetables marketed in the city of Tamanghasset (Algerian Sahara). The study was carried out on 76 samples of fruits and vegetables showing symptoms of soft rot (from 2 to 14 units each). The strains were characterized phenotypically, enzymatically and pathogenically. In addition, the antimicrobial activity of sodium bicarbonates, white vinegar and bleach, was investigated *in-vitro* on the isolates. The results showed a high diversity of microorganisms involved. The dominance of yeasts was reported, especially of the *Candida* genus, followed by the Fungi *Cladosporium* and *Botrytis* and finally the bacteria which the most important ones are *Staphylococcus xylosus* and *Neisseria cinerae*. In addition, these microorganisms are capable to produce a wide range of PCWDE (Plant Cell Wall Degrading Enzymes), represented according to the experimental case by: gelatinase (30.26%), caseinase (31.57%), amylase (4.47%), lipase (35.52%), lipoproteinase (63.15%) and haemolysin (30.26%). However, the production of pectinase in 27.63% of the isolated microorganisms which is the most phytopathogenic enzyme for the deterioration of fruits and vegetables. This was confirmed by the pathogenicity test on three types of fruits and vegetables (zucchini, mandarin, tomato). Furthermore, the *in-vitro* evaluation of the sensitivity of these pectinolytic microorganisms to the three usual disinfectants, showed a remarkable efficiency of white vinegar and sodium bicarbonate, but none with bleach. Finally, it is clear from this work that the microorganisms involved in soft rot present a significant taxonomic diversity. Their capacity to resist disinfectants and their enzymatic background are the main factors of pathogenicity.