**Abstract**

Potato soft rot continued to cause considerable damage in fields and warehouses. Although it is known that bacteria belonging to the *Pectobacterium* and *Dickeya* genus are the main causative agents, recent studies have shown the involvement of pectinolytic *Bacillus* in this disease. The sampling of eight governorates made it possible to isolate 270 bacteria, 20 of which have pectinolytic activity on Crystal Violet Pectate (CVP) medium, forming deep cavities. Phenotypic characterization has shown that they are Gram-positive bacilli, exhibit a strain dependant cellulolytic and pectinolytic activity on YM63 polygalucturonic acid (YM63 PGA). Their proteolytic and swimming-swarming motility on Milk Agar and semi solid medium respectively have shown a highest virulence than *Pectobacterium parmentieri* (IFB5308) and *Dickeya solani* (IFB0099). Following their inoculation into Potato discs, Both *Solanum tuberosum* cultivars 'Lilly' (Poland) and Spunta (Tunisia) responded to the infection. Chemotaxonomic identification by MALDI-Tof mass spectrometry and 16s rDNA amplification assigned these strains to the genus *Bacillus*: *B. pumilus* (8), *B. altitudinis* (1), *B. zhangzhouensis* (8), Bacillus safensis (2) and *Paenibacillus* xylanexedens (1). To our Knowledge, this is the first report of soft rot of Potato caused by Pectinolytic *Bacillus* spp in Tunisia

**Key words:** Potato; Soft rot; Pectinolytic; CVP, *Bacillus* *pumilu*s; MALDI-Tof, 16s Rdna