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BF16 ISOLATION AND IDENTIFICATION OF BACTERIA WITH POTENTIAL PHENOLOXIDASE ACTIVITY FROM OLIVE WASTES (ALPERUJO) IN THE PROVINCE OF CATAMARCA

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Alperujo is a solid-liquid olive waste with an enormous organic load generated from the production of olive oil by the two-phase method of olive oil extraction. This waste is rich in phenolic compounds (98% of fruit phenolics have become part of the waste), most of which are considered extremely toxic for plants and microorganisms. This justifies the high polluting effect of waste and its incompatibility to be used as compost. The aim of this work was to isolate and identify bacterial strains with potential phenol oxidase activity (FOX) at different alperujo maturation stages and also to evaluate the possibility of inactivating toxic polyphenols remaining in this waste. Bacterial colonies isolated by direct streaking on LB solid medium were incubated at 35°C for 72 h and maintained by successive streaks. Micro-morphological characterization was performed by Gram-Nicolle differential coloration, and Gram positive bacteria were heated in a water bath at 70°C during 30 min in order to select sporulating bacteria. Isolaes were identified by 16S rDNA sequence analysis. In situ FOX activity was revealed on R2A solid minimal medium supplemented with 0.2% (w/v) tannic acid. After 96 h of incubation, the dark brown coloration of the colony was considered positive. Phylogenetic analysis showed that FOX activity-carrying bacteria are close related to rod-shaped Gram positive bacteria (98-99% similarities) like *Lysinibacillus fusiformis, Bacilllus cereus, Bacillus pumilus* and also with the rod-shaped Gram negative *Pseudomonas aeruginosa* and they could be good candidates to degrade polyphenols from alperujo, and so detoxifying waste generated by olive industry. Additionally, it was observed that *Pseudomonas aeruginosa* and *Lysinibacillus fusiformis* exhibited the greatest persistence to colonizing alperujo at different maturation stages (or edges), *while Peudomonas aeruginosa* showed the highest FOX activity.