



Scopus-ISI Journal, Impact
Factor: **0.483**

J. Pure Appl. Microbiol., 13(3), 1349-1362
(2019), <https://doi.org/10.22207/JPAM.13.3.06>

البحث رقم (3) : فردي تخصص
وغير مستخلص من رسالة

Salah Abdalrahim, Abdel Naser A. Zohri, **Manal Khider**, Adel M. Kamal El-Dean, Hussein H. Abulreesh, Iqbal Ahmad and Khaled Elbanna. . Phenotypic and Genotypic Characterization of Exopolysaccharide Producing Bacteria Isolated from Fermented Fruits, Vegetables and Dairy Products. **J Pure Appl. Microbiol.**, 2019;13(3), 1349-1362

Abstract

Exopolysaccharides (EPS) particularly, from Lactic acid bacteria have received increasing attention in food, medical, and pharmaceutical applications. The present work aims to isolate, characterize and identify exopolysaccharide-producing bacteria from fermented fruits and vegetables and dairy products. A total of 55 isolates were isolated from fermented fruits, vegetables, and dairy products depending on the mucoid appearance of the colonies. Based on total EPS production, the most promising nine strains were selected, phenotypically and genotypically characterized. They were facultative anaerobe, arranged in pairs/chains (cocco bacillus), oxidase, and catalase-negative, non-spore forming and non-motile Gram-positive bacteria. All the strains were capable of growing at optimum pH between 5-7, tolerate to NaCl up to 7% (w/v), growing at 20-37°C with optimum growth at 30°C, no growth was observed at 45°C. In addition, they could utilize small range of organic compounds, except isolate S1 was differ from the others by their ability to utilize a varied range of organic compounds. Construction of phylogenetic tree, on the basis of partial 16S rRNA gene sequences indicated that isolate S1 was similar to *Leuconostoc citreum* with similarity of 91.3%, while, isolates S2 and S3 were similar to *Leu. fallax* and *Leu. mesenteroides* with similarity of 99.40 % and 97.73%, respectively. Isolates S4, S5, S7, S8, and S9 were similar to *Leu. holzaapfelii* with similarity of 98.3, 98.7 and 99.8, 98.5 and 98.1, respectively, while isolate S6 was similar to *Leu. lactis* with similarity of 97.9%. None of sugars such as lactose, glucose, and fructose except sucrose were support EPS production from these strains. The highest yield of EPS was recorded for isolates S6, S1 and S7 which were 61.90, 61.80 and 60 gl⁻¹, respectively, followed by isolates S4, S9, S5 and S8 which were 58.40, 53.06, 51.61 and 33.53 gl⁻¹, respectively. Although, the lowest yield was observed for the isolates S3 and S2 which were 22.08 and 18.80 g l⁻¹, respectively. Finally, it could be concluded that EPS production from these strains in the current study, considering them to be the alternative choice for enhancing production of EPS with increased yields, with promising realistic importance in food, pharmaceutical, as well as dairy industries.

Keywords: *Lactic acid bacteria, Leuconostoc, Exopolysaccharids, Genotypic and Phenotypic characterization, Food, dairy, medical, pharmaceutical applications.*