OP307

Production of Bacterial Cellulose and Isolation of Acetic Acid Bacterium from Wine Vinegar

Burak TOP[1], Merve TEPE[1], Nazime MERCAN DOĞAN[1]
[1]Pamukkale University, Faculty of Arts&Sciences, Biology Department, Denizli, Turkey
buraktop@hotmail.com

Aim of the study: The objective of this study is to isolate acetic acid bacterium from local wine vinegar of Çal (Denizli) region for determining its potential to produce bacterial cellulose. The structure of bacterial cellulose was also analysed by SEM.

Material and Methods: In this study, wine vinegar produced from Çal (Denizli) region grapes in 2015 by Çal Vocational High School, Pamukkale University was used for bacterial isolation. Carr and Frateur's ($CaCo_3$-Ethanol) indication methods were followed for isolation protocol of acetic acid bacteria. Gram(-) rod shape bacteria selected from Carr and Frateur's media were grown in Hestrin-Schramm (HS) broth for bacterial cellulose biosynthesis under static incubation conditions (30°C). Pellets formed on the surface of HS medium were collected and washed by 0.1 M NaOH solution in water-bath for separating bacteria and medium from the pellets. After water-bath pellets were freeze-dried for Scanning Electron Microscopy (SEM). Dry and wet weights of bacterial fiberous endproducts were taken in order to determine the water holding capacity.

Results: Isolate obtained from wine vinegar main source were called as acetic acid bacterium as a result of the inoculation in Carr and Frateur's ($CaCo_3$-Ethanol) media and named as strain S1. Strain S1 was then inoculated in Hestrin-Schramm (HS) medium for controlling the pellet formation on the surface. Jelly pellets were freeze-dried for Scanning Electron Microscopy (SEM) and weighed before and after freeze-drying for determining the water holding capacity. Water holding capacity of the sample is calculated as 24.459 gr (wet weight:24.585; dry weight:0.1260). According to SEM analyses, freeze-dried sample showed cellulose-like fiberous patterns.

Acknowledgements: This study is a part of MSc of Burak TOP. The authors would like to thank the scientific research council of Pamukkale University, Turkey, for research grant 2017FEBE018.

Keywords: Acetic acid bacteria, Bacterial cellulose, Isolation, SEM.