

# Production and Optimization of Bacterial Nanocellulose by *Gluconoacetobacter Xylinus* PTCC 1734

shahab nazari shad\*,

**Abstract Background and Aim:** Bacterial Nanocellulose (BNC) is an emerging nanomaterial with unique properties produced by several species of ubiquitous fermentation bacteria. BNC has been used for a variety of commercial applications including textiles, cosmetics, and food products, and it has a high potential for medical applications. The aim of this study was Production and optimization of bacterial Nanocellulose (BNC) using different carbon source by *Gluconoacetobacter Xylinus*. **Materials and Methods:** different carbon sources include glucose, maltose, mannitol, sucrose, glycerol and *Gluconoacetobacter Xylinus* were incubated to the Hestrin -Schramm medium. All produced cellulose layers were studied by dry weight and yield. Only 3 carbon source had the highest cellulose production were studied by X-ray diffraction (XRD) and Scanning Electron Microscopy (SEM). **Results:** The results showed that the highest dry weight and yield with the use of maltose as the carbon source was 2.37 g/L and 6.44%, respectively. Then, sucrose showed the best yield after maltose. SEM micrographs showed nanofibers of the maltose has better surface adhesion than the other. **Discussion:** This study showed that maltose and sucrose are a good carbon source to produce bacterial nanocellulose by *Gluconobacter Xylinus* in Hestrin- Schramm medium.

**Keywords :** Keywords: Bacterial Nanocellulose (BCN), *Gluconobacter Xylinus*, Carbon source, Hestrin- Schramm

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