

Production of Extracellular Glycoprotein Biosurfactant from *Rhodotorula glutinis* and Its Use in Elimination of Solar Pollution

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THE SEARCH for cheaper biosurfactant production alternatives has attracted the recent studies. Yeast isolates revealing biosurfactant activities were obtained from autochthonous microflora of asphalt heavily polluted with solar slurries collected from five different bus garage stations in Cairo. By means of standard yeast identification procedures the isolates were identified. Seven yeasts were isolated from fifty localities, they were *Candida guilliermondii*, *Candida kefyr*, *Candida tropicalis*, *Pichia* sp, *Rhodotorula glutinis*, *Saccharomyces* sp and *Torulopsis* sp. The preliminary investigation of the extracellular biosurfactants production was detected by using three parameters. The culture of *Rhodotorula glutinis* gave the highest biosurfactant activity. Optimal conditions for maximum biosurfactant activity were investigated under different temperatures; pH values; different sources of phosphorus, nitrogen and different concentrations of yeast extract. Analytical methods for the purified biosurfactant showed that the biosurfactant is glycoprotein. Electrophoretic profile showed ten bands in the protein portion of the purified biosurfactant. Three amino acids were detected in the protein moiety. The possibility of the biosurfactant for commercial application was studied by Sandpack test.

Keywords: Biosurfactant, Yeasts- Solar, Glycoprotein.

Pollution of sewage with oil spills from car stations and others from oil used factories as fuels is consider a big problem in recent years. Microorganisms synthesize a wide variety of high- and low-molecular-mass bioemulsifiers (Rosenberg and Ron 1997; Richter *et al.* 1998 & Rahman *et al.* 2002). Microbial surfactants are a diverse group of surface-active structures which have attracted a considerable interest in recent years, due to their potential commercial applications in detergent industry (Rosenberg and Ron 1998, 1999), formulations of herbicides and pesticides (Rubinovitz *et al.* 1982 & Patel and Gopinathan 1986), petroleum, pharmaceutical, food processing and capacity to be manufactured from renewable and cheaper substrates (Maier and Soberon-Chavez 2000; La Duc *et al.* 2004 and Cameotra and Makkar 2004).