

Production of Biosurfactant by *Pseudomonas aeruginosa*

Hrutiya M Maydeo, Pratiksha R Phadke, Sonu R Tanwar, Kirti J Mhatre

Department of Biotechnology, Mahatma Phule A.S.C. College, Panvel, Raigad, Maharashtra, India
 bhaverutuja@gmail.com*, kjmhatre2@gmail.com

Abstract: Surfactants are chemically and biologically amphiphilic compounds that have hydrophilic and hydrophobic domain. Microbes produce biosurfactants in relatively large quantities. Biosurfactants have wide applications in industries including petroleum, food, agriculture. This study is based on potential biosurfactant production by *Pseudomonas aeruginosa*. BHMS (Bushnell Hass Mineral Salt) medium with glucose as substrate is used as production medium for *Pseudomonas aeruginosa*. The crude biosurfactant is extracted from supernatant. Different confirmatory tests were performed including oil displacement test. Gas chromatography was performed for qualitative estimation of rhamnolipids.

Keywords: Biosurfactants, *Pseudomonas aeruginosa*, Rhamnolipids

REFERENCES

- [1]. Desai JD, Banat IM. Microbial production of surfactants and their commercial potential. *Micro and Mole Bio Rev.* 1997;61:47-64.
- [2]. N.K. Bordoloi, B.K. Konwar, *Colloids Surf. B Biointerfaces* 63 (2008) 73–82.
- [3]. Y. Zhang, R.M. Miller, *Appl. Environ. Microbiol.* 58 (1992)
- [4]. F. Ahimou, P. Jacques, M. Deleu, *Enzyme Microbial Technol.* 27 (2000) 749–754.
- [5]. L.M. Prieto, M. Michelon, J.F. Burkert, S.J. Kalil, C.A. Burkert, *Chemosphere* 71 (2008) 1781–1785.
- [6]. Fijan, S. Microorganisms with claimed probiotic properties: An overview of recent literature. *Int. J. Environ. Res. Public Health* 2014, 11, 4745–4767. [CrossRef] [PubMed]
- [7]. Gasbarrini, G.; Bonvicini, F.; Gramenzi, A. Probiotics History. *J. Clin. Gastroenterol.* 2016, 50, S116–S119. [CrossRef] [PubMed]
- [8]. M. Nakano, M. Marahiel, P. Zuber, *J. Bacteriol.* 170 (1988) 5662–5668.
- [9]. N. Roongaswang, J. Thaniyavarn, S. Thaniyavarn, T. Kameyama, M. Haruki, T. Imanaka, M. Morikawa, S. Kanaya, *Extremophiles* 6 (2002) 499–506.
- [10]. J. Vater, B. Kablitz, C. Wilde, P. Franke, N. Mehta, S. Cameotra, *Appl. Environ. Microbiol.* 68 (2002) 6210–6219.
- [11]. J.-Y. Wu, K.-L. Yeh, W.-B. Lu, C.-L. Lin, J.-S. Chang, *Bioresour. Technol.* 99 (2008) 1157–1164.
- [12]. Rodrigues, L.R., Van der Mei, H.C., Teixeira, J.A. and Oliveira, R. (2004) Influence of biosurfactants from probiotic bacteria on formation of biofilms on voice prosthesis. *Appl Environ Microbiol* 70, 4408–4410.
- [13]. De Almeida et al., 2016 D.G. De Almeida, R. Soares Da Silva, C.F. de, J.M. Luna, R.D. Rufino, V. A. Santos, I.M. Banat, L.A. Sarubbo Biosurfactants: Promising molecules for petroleum biotechnology advances *Frontiers in Microbiology*, 7 (2016), pp. 1 14, 10.3389/fmicb.2016.01718
- [14]. Mata-Sandoval JC, Karns J, Torrents A. Influence of rhamnolipids and Triton X100 on the biodegradation of three pesticides in aqueous phase and soil slurries. *J Agric Food Chem* 2001;49:3296–303
- [15]. Krishnaswamy M, Subbucettiar G, Ravi TK, Panchaksharam S (2008) Biosurfactants properties, commercial production and application. *Current Science* 94: 736-747.
- [16]. Rodrigues L, Banat IM, Teixeira J, Oliveira R (2006) Biosurfactant; potential applications in medicine. *J AntimicrobChemother* 57: 609-618.
- [17]. Smith RS, Iglesias B (2003) *P. aeruginosa* quorum-sensing systems and virulence. *CurrOpinMicrobiol* 6:56–60

