



Biosurfactants – Potential and Applications

Lígia Rodrigues, José Teixeira

*IBB-Institute for Biotechnology and Bioengineering, Centre of Biological Engineering,
Universidade do Minho, Campus de Gualtar, 4710-057 Braga, Portugal.*

Biosurfactants are molecules that exhibit pronounced surface and emulsifying activities, produced by a variety of microorganisms. A host of interesting features of biosurfactants, such as higher biodegradability, lower toxicity, and effectiveness at extremes of temperature, pH and salinity; have led to a wide range of potential applications in the fields of oil recovery, environmental bioremediation, food processing and medicine. In spite of the immense potential of biosurfactants, their use still remains limited, possibly due to their high production and extraction costs, low yields in production processes and lack of information on their toxicity towards human systems [1]. The use and potential commercial application of biosurfactants in the medical field has increased during the past decade [2]. Their antibacterial, antifungal and antiviral activities make them relevant molecules for applications in combating many diseases and as therapeutic agents. In addition their role as anti-adhesive agents against several pathogens indicates their utility as suitable anti-adhesive coating agents for medical insertional materials leading to a reduction of a large number of hospital infections without the use of synthetic drugs and chemicals. The most promising alternative to turn its production competitive for industrial applications is the knowledge of the genes involved in their biosynthesis. Identification and isolation of those genes will allow enhanced production. Furthermore, modification of those genes by genetic engineering will result in the production of novel biosurfactants with specific novel properties. Medicinal and therapeutic perspectives of biosurfactants applications and future research plans will be presented.

- [1] Rodrigues LR, Teixeira JA, “Biosurfactants production from cheese whey”, *In: Advances in Cheese Whey Utilization*. Cerdán ME, González-Siso M and Becerra M, Editors. ISBN: 978-81-7895-359-5 Transworld Research Network Publishers. (2008) pp 81-104.
- [2] Rodrigues LR, Banat IM, Teixeira JA, Oliveira R, “Biosurfactants: potential applications in medicine”, *J. Antimicrob. Chemother.* (2006) **57(4)**:609-618.