

## Application of Vegetable Oil Refinery Soapstock to Rhamnolipid Biosurfactant Manufacturing

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**Background & Objectives:** Industrial wastes are the inevitable results of product manufacturing in industry. Prevention of their accumulation has been a challenge for environment authorities. On the other hand, this issue is going to be more serious while industrial development. One strategy to reduce this problem is use of the wastes as raw materials in manufacturing industries. In this way, utilization of soapstock as one of the vegetable oil refinery wastes has been studied for rhamnolipid biosurfactant production by *Pseudomonas aeruginosa* MR01. Accumulation of soapstock having high COD (Chemical Oxygen Demand) is contributing in environment problems. Hence, this study combined effluents reduction with manufacturing the valuable and biocompatible surface active agent.

**Methods:** Soapstock COD was measured using open reflux methods. Soapstock was consumed as sole carbon source for rhamnolipid biosurfactant production in mineral culture. Biosurfactant production was determined by acid precipitation-solvent extraction procedure.

**Results:** Soapstock showed a high COD around 510,000 mg O<sub>2</sub>/l. The maximum rhamnolipid production using soapstock as a sole carbon substrate was obtained 14.8 g/L which was significant comparing to previous reports.

**Conclusion:** Results have concluded that application of soapstock to produce bioactive material caused high production efficiency and environment protection from waste overloading. Furthermore, because of biosurfactants advantages over their chemical counterparts, substituting them for chemically ones will lead to reducing environmental releases of chemicals.

**Keywords:** Biosurfactant; *Pseudomonas aeruginosa*; SoapStock