

Department of Chemistry

Development of novel renewable resources based biotechnologies

Biochemical and Process Engineering Group



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- 2006 - 2009: Head of Drug Discovery Department, BIOALVO
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Objectives

Utilization of renewable resources for the production of chemicals, fuels and other bioproducts has risen as a strong alternative to fossil feedstocks for obvious environmental and economical reasons.

The aim of the project is to develop and **optimize new environmental and economically sustainable processes** for the production of bioproducts using native or genetically engineered microorganisms grown on renewable sources.

Methodology

- Identification of high value-added bioproducts and of consumer/industry needs e.g. vanillin, succinic acid or exopolysaccharides
- Lab scale process development and optimisation:
 - selection or construction of efficient microorganisms
 - design of process bioreactor and separation set up
 - optimisation of operating conditions
- Scale up of bioprocess as proof of concept

Expected Results

- Efficient production of vanillin (one of most important aroma in the food industry) by biotransformation of ferulic acid using *Streptomyces setonii*
- Improvement of succinic acid production from glycerol and other feedstocks by rumen bacterium *Actinobacillus succinogenes*
- Isolation of new marine bacteria from Madeira for the production of innovative exopolysaccharides for the cosmetics, pharmaceutical and food industry.

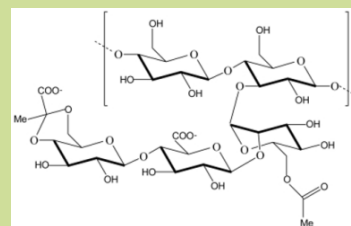
Selection of producing microorganisms



Production in controlled fermentation



Succinic acid as versatile building block



Structure of xanthan, one example of exopolysaccharides



Vanilla plantifolia, the natural source of vanillin

Funding: