

Bioprocess Engineering  
Recovery and Purification of Fermented Products: ①

Flow Chart: - (Penicillin-G - Recovery and Purification)

Harvest Broth From Fermenter



Chill to 5° to 10°C



Filter/Wash off P. chrysogenum mycelium using rotary vacuum filters (RVDF)



Acidify filtrate to pH 2.0 to 2.5 with H<sub>2</sub>SO<sub>4</sub>.



Extract penicillin from aqueous filtrate into butyl acetate in a centrifugal counter current extractor means (opposite flow of the product to the extractor)



Extract Penicillin from butyl acetate into aqueous buffer (pH 7.0) in a again centrifugal counter current extractor



Acidify the aqueous fraction to pH 2.0 to 2.5 with H<sub>2</sub>SO<sub>4</sub> and reextract Penicillin into butyl acetate



Add Potassium acetate to the organic extract for crystallization of penicillin as a potassium salt (stable form)



Recover the crystalline product in a filter centrifuge. (recover and recycle butyl acetate)



PENICILLIN SALT



(Processing for diff. product)

② The recovery and purification of fermented products may be difficult and costly. Unfortunately the recovery cost of microbial products may vary from as low as 15% to as high as 70% of the total manufacturing cost.

The choice of recovery process depends upon the following criteria: -

- ① IntraCellular / ExtraCellular location of product.
  - ② The Cost of fermented product in broth.
  - ③ Physical & Chemical properties of fermented product.
  - ④ The intended use of product.
  - ⑤ Min. acceptable standard of purity.
  - ⑥ The Impurities in the fermented broth.
  - ⑦ the marketable price of the product.
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