

Write an explanatory note on DSP (Down Streaming Processes)

As we have already discussed standard protocol for DSP of antibiotics, organic acid and vitamins besides these there are some general methods used for DSP in microbial Industrial fermentation Industries, some of which are summarised as below:-

The recovery and Purification of many compounds may be achieved by a no. of alternative routes. The decision to use a particular method depends upon following factors:-

- ① Capital cost
- ② Processing cost
- ③ Throughput requirements
- ④ Yield potential
- ⑤ Product Quality
- ⑥ Technical Expertise available
- ⑦ Confirmation regulatory requirements (For which must follow federal or central govt. laws)
- ⑧ Waste treatment needs.
- ⑨ Continuous / Batch processing
- ⑩ Automation
- ⑪ Personel health and safety

The major problems being faced in fermentation industry now a days are large scale purification of biologically active compounds (means it should have functional properties). For a process to be economically viable large scale production is required and therefore large scale separation, recovery and purification.

Different methods used for DSP:-

- ① Removal of microbial cells and other solid matter
- ② Foam separation
- ③ Precipitation
- ④ Filtration
- ⑤ Rotary vacuum filters
- ⑥ Centrifugation
- ⑦ Cell disruption methods - Two types
 - ① Physio mechanical methods like
 - Liquid shear
 - Solid shear
 - Agitation
 - Freeze thawing
 - Ultrasoundication
 - ② Chemical methods
 - Detergents
 - Osmotic shock
 - Alkali treatment
 - Enzyme treatment