This project aims to valorize birch bark by extracting Betulin from it. As of now, bark is considered as waste and usually combusted. However, bark contains up to 30 wt% of Betulin, which is a versatile bioactive component used in pharmaceutical and cosmetics industry.

**SOCIETAL NEEDS**

Anti-HIV, Antitumor, Skin Restorer Products

**PLANT LAYOUT**

**PROCESS DESCRIPTION**

1. **Bark Pre-treatment**
   Bark is shredded and pre-treated with a 7.5 wt% Na₂CO₃ solution to remove polar admixtures.

2. **Filtration and Drying**
   The slurry exiting pre-treatment is filtered and dried further with a belt dryer to remove excess moisture from the bark.

3. **Ethanol Extraction**
   Betulin is leached from the bark using ethanol through a counter-current multistage extraction system.

4. **Precipitation**
   Betulin extractives are precipitated using H₂O and dried into powder form with a purity of 82.6%.

5. **Ethanol Recovery**
   Ethanol is recovered and recycled back into the process using extractive distillation with ethylene glycol.

6. **Wood Waste Combustion**
   Exhaused bark is sent to the mill’s incinerator which produces steam used for energy generation.

**ENVIRONMENTAL ASSESSMENT**

**PROCESS ECONOMICS**

NPV: $12MM  
IRR: 16%

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