

Production of biodiesel using tannery fleshing as a feedstock via solid-state fermentation

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ABSTRACT

The objective of this study is to investigate solid state fermentation (SSF) mediated hydrolysis of tannery wastes to produce short and long chain fatty acids (SCFA and LCFA) followed by transesterification with methanol using alkali catalyst. Controlled inoculum which was isolated from soak liquor to be used in SSF, showed the maximum homology with the *Microbacterium* species by 16srDNA sequencing method. At 72 hours of Solid state fermentation (SSF), the maximum acidity and triglyceride hydrolysis were 39.46 % and 83.9% respectively. The predominant total fatty acids of the SSF samples were found to be oleic acid (C18:1n-9), palmitic acid (C16:0), and stearic acid (C18:0) and estimated to be 80 %. Transesterification rate was optimized at 3 hr reaction time with 1%NaOH (w/v %), 6% methanol to oil ratio (w/v %) to produce 89% conversion rate. C₁₃ NMR confirmed the formation of fatty acid methyl esters group in the oil.

Key words- Tannery wastes, Fatty Animal Fleshing, Trans-esterification, Immobilization, solid state fermentation.