**Abstract**

Biodiesel (Fatty acid methyl esters), which is derived from triglycerides by transesterification with methanol, has attracted considerable attention during the past decade as a renewable, biodegradable and nontoxic fuel. Several processes for biodiesel fuel production have been developed among which the enzymatic process offers several advantages than the chemical routes. Enzymatic transestrification using lipase has become more attractive for biodiesel fuel production, since the glycerol produced as a by product can be easily recovered and the purification of fatty acid methyl ester is simple to accomplish. The main hurdle to the commercialization of this system is the cost of lipase production. As a means of reducing the cost, the extra cellular enzyme is significantly advantageous. In the present investigation, optimization of process parameters for high lipase production by the microbes *viz*, *Mucor racemosus*, *Aspergillus terreus* and *Penicillium candidum* using SOB and MYGP medium were carried out. Culture filtrates were used as extra cellular crude enzyme source as a catalyst for conversion of cotton seed oil to biodiesel and the parameters such as quantity of enzyme and methanol needed for significant yield of biodiesel were standardized