

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM – 590 014



**A
PROJECT REPORT
ON
“UPPAGE OIL CHARECTERISATION AND
PERFORMANCE ANALYSIS OF CI ENGINE BY
USING UPPAGE BIO DIESEL”**

(SPONSORED BY KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY,
BANGALORE AND KARNATAKA STATE BIO FUEL DEVELOPMENT BOARD BANGALORE)

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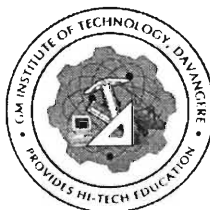
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ABSTRACT

Global concerns about the depletion of the world's non-renewable energy sources and the associated environmental impact of fossil fuel provided the incentives to seek alternatives to petroleum-based fuels. Alternative renewable fuel, found in vegetable oils such as Uppage oil, which abound in monsoon forest in the western ghat, is characterized with high viscosities thus limiting their applications as fuel. The use of transesterified vegetable oils as fuel has been yielding successful results besides being a domestic, renewable resource that provides environmental benefits with lower emissions. In this work, laboratory scale quantities of methyl ester of Uppage oil were produced and characterized as diesel fuel. NaOH was selected to catalyze the transesterification process of Uppage with methanol using 100ml oil sample, 20g methanol, 1.0% NaOH at 60°C reaction temperature and around 30 minutes reaction time. The process was triplicated and average results evaluated. The biodiesel produced was characterized as alternative diesel fuel through tests for specific gravity, viscosity, cloud point, and pour point following ASTM standard test procedures. The transesterification process yielded 60-65ml biodiesel. Specific gravity is higher than that of commercial grade petroleum diesel. At 40°C, Uppage oil had huge reduction of viscosity over its raw vegetable oil, thus enhancing its fluidity in diesel engine. Higher pour point and cloud point were obtained for Uppage oil compared to -12°C, and -16°C respectively obtained for Diesel. Generally, results obtained were found to be in good agreement with previous works and within limits set by a number of International Standards for biodiesel. These findings will find useful applications in energy sector of the Indian economy.