are limited. Moreover, it has been reported that nearly 70-95 % of the total production cost is related to the cost of raw materials. This issue can be overcome by the use of WASTE FRYING OIL (WFO)as raw material which can effectively reduce the feedstock cost to 60-70%.

Recycling of waste frying oils (WFO) offers a significant potential as low-cost raw material for biodiesel production.

Therefore, the use ofoleander oil with a percentage of WFO is an alternative that could minimize biodiesel production costs.Important attention has the waste frying oil (WFO), a promising biodiesel feedstock.It has also been reported by Boro *et al.* (2014) that there is significant effect of temperature on transesterification. There are three systems of transesterification with vegetable oil or an animal fat as a starting material-they are homogeneous, heterogeneous systems and enzymatic based on the catalyst employed in the processas reported by Thirumarimurugan *et al.* (2012). WFO is reacted with alcohol. In most of the cases methanol is used because of better efficiency.

Materials and Methods:

The present research work was conducted in the department of Botany, Patna Women's College, Patna during the period of July to October, 2019. To get the desired result methods of transesterification and separation is needed.

Reagents and chemicals – All the chemicals were purchased from Merck Ltd.

Apparatus and Instruments – These were issued from Department of Chemistry, Patna Women's College, Patna.

Plant material–Seeds of *Thevetia sp.* were collected from local area of Kankarbagh Patna, Bihar during the month of August, 2019.

WFO samples – WFO sample I was collected from local restaurant in Patna and WFO sample II from local street food seller.

Methodology :

Preparation of *Thevetia* seed powder : Seeds were dried and powdered using mortar and pestel.

Extraction of oil from powdered seed : Powdered seeds were kept in water bath for 4- 5 hours and tampered in mortar pestel to squeeze out oil from it.

Method of alkali mediated transesterification : Method suggested by Ranganathana *et al.* (2008) was used for transesterification process.

Following are the steps involved in the transesterification –

- The first step was to mix the methanol with the oil of Oleander in the ratio of 1:6 (volume ratio). 0.5ml of oil was mixed with 3ml of methanol in presence of NaOH (0.5g NaOH dissolved in 50ml distilled water) to form a homogeneous2reaction mixture. Similarly, WFO-I and WFO-II was taken 3ml along with NaOH separately and a blend of WFO- I and Oleander oil was taken in another flask along with NaOH.
- The whole reaction mixture was then placed in the shaker incubator for continuous agitation at 50-60degree celcius, 200 rpm for 1-3 hours.
- Homogeneous mixture of crude biodiesel inside shaker incubator indicates the completion of transesterification reaction.

Separation of Biodiesel : After transesterification process, the biodiesel was separated from its byproduct using a separating funnel.

Measurement of parameters of oil, WFO, blend of oil and WFO and its biodiesel produced : Density, Kinemetic Viscosity and Solubility was measured using Densimeter, Viscosimeter resepectively.

Results and Discussion:

Table 1. Estimation of Physical parameters of Diesel,Oleander oil, WFO and biodiesel produced from blend of Oleander oil and WFO (after transesterification process)

SL. NO.	TYPE OF FUEL→ PROPERTIES ↓	UNIT	DIESEL	OLEANDER OIL	WFO-I	WFO-II	BLEND OF OLEANDER OIL AND WFO	NORMATIVE (EN)
1.	Density	kg/m3	830	920	930	920	850	860 - 900
2.	Kinematic Viscosity	mm^2/s	3.91	4.33	5.14	5.10	4.30	3.5 - 5.0
3.	Solubility	——	Soluble and forms cloudy appearance	Insoluble in methanol	Insoluble in methanol	Insoluble in methanol	Soluble in methanol and forms cloudy appearance	Soluble in methanol

Density : The density of oil of *Thevetiasps.* and WFO was originally very high when measured separately but when mixed together and transesterified it was found that there was a reduction in its density because of the use of alkaline catalyst as making a blend of both the oils (Table 1). This result was very much according to normative (according to European Standards). This result was in good agreement with the result of Azocar *et al.*(2007) which was reported to be 880kg/m3.

Kinematic Viscosity : The kinematic viscosity of *Thevetiasps.* and WFO was initially high when measured separately and when both were mixed and transesterified and then measured, it was found that there was little reduction in its kinematic viscosity but even then it fulfilled the normative data (according to European Standards) (Table 1). This change was observed due transformation of higher chain of alkyl fatty acids into smaller ones as reported by Alamu *et al.* (2010)

Solubility : Both WFO and Oleander oil was insoluble in solvents like water, methanol and ethanol. After transesterification the biodiesel was soluble in methanol and formed a cloudy appearance. Petro-diesel was also completely soluble in methanol and formed cloudy appearance (Table 1). It was due to the fact that biodiesel and fossil diesel are non polar in nature like methanol. Thus, they are completely soluble in methanol. This result was good in agreement with result of Kwanchareon *et al* (2007).

Conclusion:

The high costs implicated in marketing biodiesel constitute a major obstacle. To this regard therefore, the use of Waste Frying Oils (WFO) should produce a marked reduction in the cost of biodiesel due to the ready availability of WFO at a relatively low price. Also alkaline catalyst is more commonly used in commercial biodiesel production because it it has lower reaction time than the acid catalyst . The results obtained may contribute to the establishment of a production process in which the WFO may be employed as raw material for the production of biodiesel.

On the basis of our result, it can be concluded that “Biodiesel production from oil extracted from seeds of *Thevetiasps*. and Waste Frying Oil” may be an effective method for biodiesel production as it is an eco-friendly and convenient source of biodiesel.

Acknowledgement:

We extend our gratitude to the Principal, Patna Women's College and Dr.Pinky Prasad, Head of Department of Botany for their constant support .

References:

Alamu O.J. , Nwaokocha C.N., Adunola O. (2010). Design and construction of a domestic passive solar food dryer.*Leonardo Journal of Sciences*,16:71 - 82.

Azocar L., Scheuerman E., Hidalgo P., Betan Court R. (2007) Biodiesal Production from Rapseed Oil with Waste Frying Oils. *Journal of Bioscience and Bioengeering.* 2:46-50.

Boro B., Basumatarg S., Choudhury P.K., Gogoi B. (2014). Feedstocks, Production, Properties and Blending Effect of Biodiesel : *A Review International Journal of Recent Development in Engineering and Technology,* 3(1):6-10.

Ranganathana J., Daniels R. J. R. Chandran M.D.S., Ehrlich P. R. (2008). Sustaining Biodiversity in Ancient Tropical Country Side; National Academy of Sciences. 105(46). DOI: 10.1073 / pnas-0808874105.

Kwanchareon P., Luengnaruemitchai A., Jai-In, S. (2007). Solubility of a Diesel–Biodiesel–Ethanol Blend, Its Fuel Properties, and Its Emission Characteristics from Diesel Engine. Fuel, 86:7-8. DOI : 10.1016 / j.fuel.2006.09.034

Thirumarimurugan M., Sivakumar V. M., Xavier A. M., Prabhakaran D., Kannadasan T. (2012). Preparation of Biodiesel from Sunflower Oil by Transesterification. International Journal of Bioscience, Biochemistry and Bioinformatics. 2(6). DOI - 10.7763 / IJ BBB.2012.V2.151.

Zhang, Z. Wang, Y. , Liu, P. (2007). Preparation of biodiesel from waste cooking oil via two-step catalyzed process. Energy Conversion and Management. 48:184-188. DOI - 10.1016 / j.enconman.2006.04.016.