

**Janani G.**

*M. Tech Biotechnology, PSG college of  
technology, Coimbatore  
23 years old*



### **Project Title**

Studies on waste cooking oil (WCO) & *Moringa oleifera* oil (MOO) mixture for a sustainable biodiesel production process using biomass based heterogeneous catalyst.

### **Objective**

Optimization of biodiesel production from WCO & MOO using calcined nendran banana peel as heterogeneous catalyst with ultrasonic treatment.

### **Method**

Ultrasound based esterification of *Moringa oleifera* oil was performed for the first time and acid value is reduced to relatively shorter time compared to conventional stirring. Ultrasound based transesterification of waste cooking oil with nendran banana peel ash was being investigated.

Blending of waste cooking oil and *Moringa oleifera* oil will improve physicochemical properties of biodiesel and reduce the cost of second generation biodiesel.

Mixing of *Moringa oleifera* oil with waste cooking oil improves the cetane number of waste cooking oil which reduces gaseous emission.

### **Outcome**

- 1) Efficient biodiesel production in lesser time with minimum solvent and catalysts than conventional biodiesel production.
- 2) Overall cost of second generation biodiesel will be comparatively less.
- 3) Quality of biodiesel will be improved without any time consuming and resources exploiting downstream process.
- 4) Sustainable production can be achieved by using a blended feedstock.

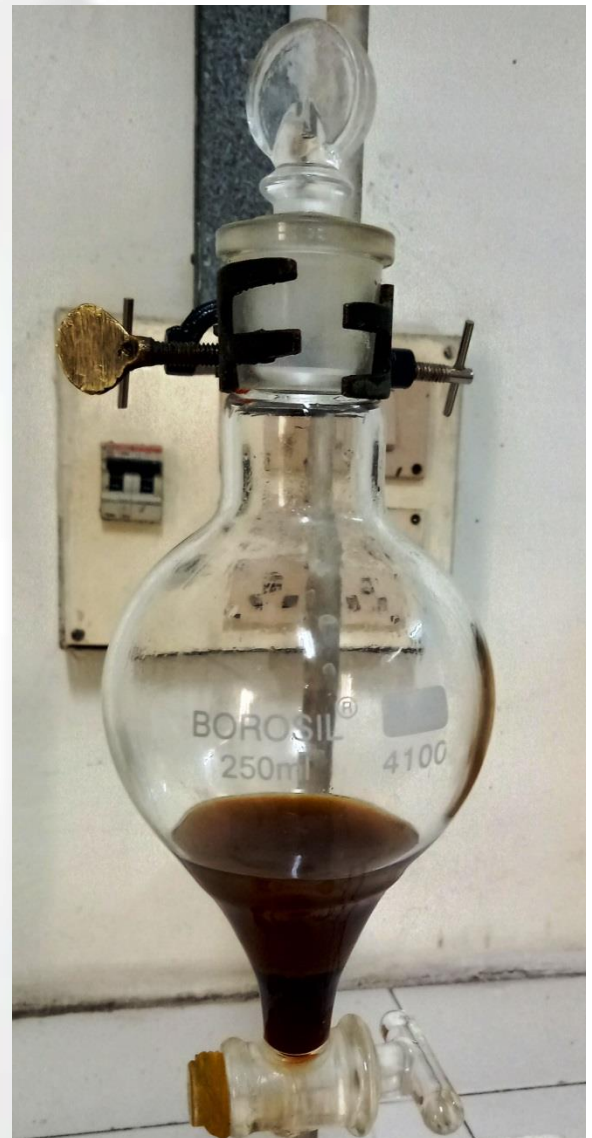
### **Conclusion**

- 1) The efficiency of ultrasonication was evident from the results obtained with the esterification of *Moringa oleifera* oil.
- 2) Produces pure biodiesel without much time consumption.

3) We can use waste cooking oil for manufacturing biodiesel which means there is no residue of waste oil and low gaseous emission.

### Implementation

- 1) Can be used in vehicle with mixture of conventional fuel.
- 2) In some power stations, biodiesel is the main source of fuel to run power generators.
- 3) Byproduct of this process like seed cake of *Moringa oleifera* oil and glycerol has various valuable applications.



**Washing & Drying**



**Grinding**



**Sieving**



**Calcination**