

Production of biofuel from waste (Chicken Greases)

M.F.ATITAR, L.FARIANE, S.KITANE (a), M.AlaouiElbelghiti (b), O.K.BOUHLEL (a), Ghazaoui Didi.A(a)

- (a) Unité de Recherche appliquée : Traitement et Valorisation de la Matière ENIM-Centre d'incubation et d'accueil d'entreprises innovantes Réseau Marocain D'Incubation et D'Essaimage-(RMIE)
- (b) Laboratoire de chimie physique générale. Faculté des sciences RABAT

Objectif: Production of biofuel from waste of animal greases (chicken) in order to develop this waste harmful for the environment and the health of the consumer, not in the depend of the food stocks.

Abstract: With an aim of developing the food industrial wastes, we proceed to produce biofuel from this waste by a chemical treatment which is divided into two stages. The first is an extraction of the oil grease which is subjected thereafter to a transesterification reaction wish is the most important stage in this process of valorization. By studying the various parameters influencing this reaction (Quantity of catalyst, temperature and reaction time).

We had as a product; biofuel wish is alkylic esters of the fatty-acids contained in oil and as second product, the glycerin.

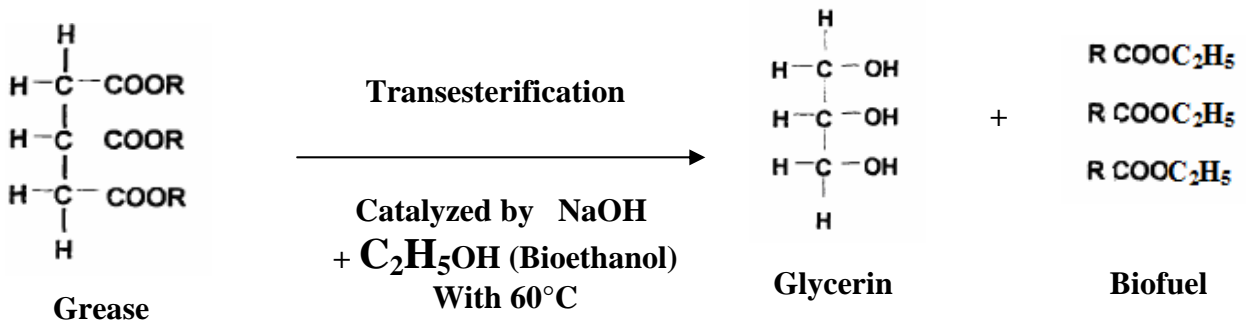
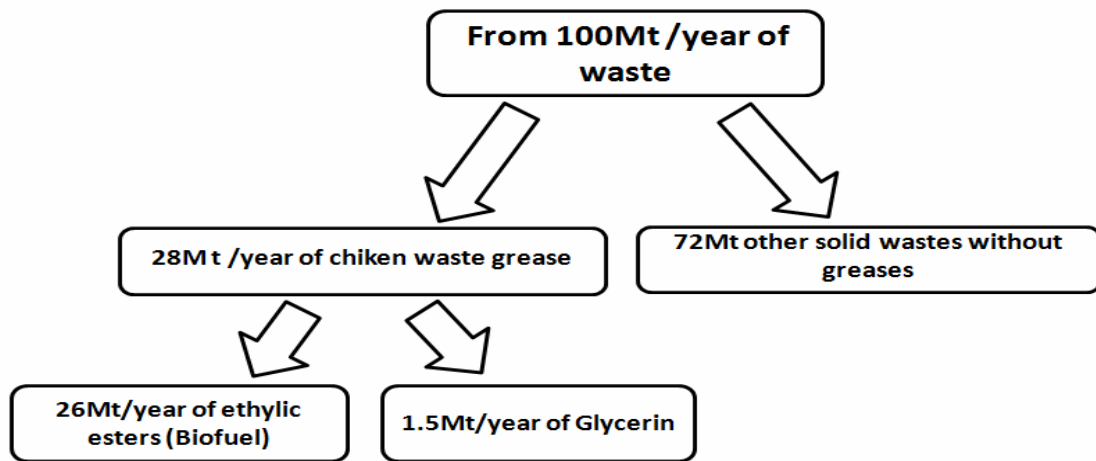
Reactive alcohol used is bioethanol produced by the Moroccan company Delta. Holding which has a production capacity of 60000m³ exceeding the consumption needs of 30000m³.

This process is a valorization of animal waste and also the bioethanol production in Morocco.

Keywords: waste, grease, oil, biofuel, catalyst, transesterification, bioethanol.

Process: Collect greases of chickens wastes and similar product

Flowsheet treatment



R: oleic acid 50%

Methodology:



chicken's crude wastes



Haste of crushed grease



Transesterification



Decantation and separation of the obtained phases



Biofuel after washing and drying



Flash point test of the biofuel



Results:

The oil rate from extraction of greases from chicken's waste reaches 28% while the conversion rate of these greases to biocarburant is 98% depending on various factors as well the reaction conditions used.

Biofuel properties :

Proprety	Density at 15°C Kg/m ³	Viscosity at 40°C	Flash point °C	Sulfur content	Cetane Number min	Pouvoir calorifique MJ/l	Cold propertes		
							Could point °C	Pour Point °C	Low-Temperature Filterability °C
Biofuel	880	3.8	125	0	53	33.1	-12	-21	-3

Technico-economic study:

The simulation of the manufacturing process of the biodiesel starting from yellow grease realized by Mahacine Amrani [1] and the technico-economic study carried out by J.M. Marchetti, A.F. Errazu [2] leads to an estimation of the cost of this biofuel is about 5500DH for a small production unit of 10.000 t/year. considering the following hypothesis :

(Raw material + transport) 2000Dh/t.
(Investment) 3500Dh/t.

Reference:

Mahacine Amrani: Department of chemical engineering Technology & Faculty of Science, Tangier, Morocco. Facta universitatis Physics series, chemistry and technology. vol5 n°1 2007. p 61-67. SIMULATION OF THE MANUFACTURING PROCESS OF THE BIODIESEL FROM YELLOW GREASES.

Marchetti, A.F. Errazu. Technoeconomic study off supercritical biodiesel seedling production, Energy Conversion and Management 49 (2008) 2160-2164.

