Jatropha Oil- a New Hope of Green Fuel. Extraction and Characterization

El Sohaimy Sobhy Ahmed

City of Scientific Research and Technological Applications, Dept. of Food Technology, Arid land Cultivation Research Institute, 21934, Alexandria, Egypt. Email: elsohaimys@gmail.com

Jatropha oil is one of the most promising sources of bio-fuel today. The chemical composition of the oil is 6.2% moisture, 18% protein, 25-40% fat, 17% carbohydrates, 15.5% fiber and 5.3% ash. There are two ways to extract oil from Jatropha seeds: (i) the mechanical extraction using a machine to exert pressure on the oilseeds in order to remove the oil. The oil recovery from mechanical extraction is up to 90-95% of the oil present in the seeds, (ii) the solvent extraction, where a solvent is added to pre-crushed seeds in which the oil dissolved. Solvent extraction can yield up to 99%.

The crude oil contains significant amounts of solid material that need to be removed. The solids can be mechanically separated from the oil, based on particle size (filtration) or on specific gravity (sedimentation, centrifuging). The two separation principles can also be used in series.

The oil quality is affected by: Moisture content of seeds, Process temperature, Hull content of the seeds and Pressure. Different applications of Jatropha oil require different levels of quality. In most cases Jatropha oil is used for one of the following applications: transformed to bio-diesel, bio-oil for cooking, lighting, cooling, and pumping, soap-making, pharmaceuticals. The standard refining steps in the industrial production of both consumer and fuel oils are degumming and neutralizing.