

Automated moringa oil ext



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Moringa oil comes from the seeds of the *Moringaoleifera* tree, a fast growing herbal tree species native to the Philippines which has many uses. The seeds, harvested from their pods, are cultivated, dried and extracted to produce moringa oil. In the Philippines, moringa is propagated by planting 1-2 m-long limbs cuttings, preferably from June to August. The plant starts bearing pods 6-8 months after planting, but regular bearing commences after the second year, continuing for several years. It can also be propagated by seeds, which are planted an inch below the surface and can be germinated year-round in well-draining soil.

As with all plants, optimum cultivation depends on producing the right environment for the plant to thrive. Moringa is a sun and heat-loving plant, and thus does not tolerate freeze or frost. Moringa is particularly suitable for dry regions, as it can be grown using rainwater without expensive irrigation techniques. The seeds, sometimes removed from more mature pods and eaten like peas or roasted like nuts, contain high levels of vitamin C and moderate amounts of B vitamins and dietary minerals.

Mature seeds yield 38-40% edible oil called ben oil from its high concentration of behenic acid. The refined oil is clear and odorless, and resists rancidity. The seed cake remaining after oil extraction may be used as a fertilizer or as a flocculent to purify water. Moringa seed oil also has potential for use as a biofuel. Previous researchers have extracted *Moringaoleifera* oil by using different methods such as solvent and aqueous enzymatic extraction (Abdulkarim et al. 2005) but focussed on the study of the physicochemical properties of the oil obtained.

Information on the influence that oil and oil extraction method could have over the primary coagulant protein of *Moringaoleifera* seed extract and its coagulant activity has not been supplied yet. The current work studies two solvent extraction procedures of *Moringaoleifera* oil and its influence over oil yield extraction and coagulant activity of the extract prepared with defatted seeds.

Our proposal allow us to develop an oil-extraction procedure which uses and automation in the extraction process and increases the value of the defatted residues generated in production of a natural coagulant from *Moringaoleifera* seeds. *Moringaoleifera* seed extract and its *Moringa* seed oil is clear and odorless. It has many uses. It is also a popular natural supplement to increase the health and strength of the hair and scalp. Because *Moringa* contains powerful antioxidants, it's also included in soaps, shampoos, body washes, and skin scrubs. The oil can be used for soap making and consumption.

Besides the industrial uses such as fine lubricant and perfumery, the fatty acids profile of the oil with its very high content of oleic acid may make it an oil with high potential for further industrial application. Automation is now often applied primarily to increase quality in the manufacturing process, where automation can increase quality substantially. Hazardous operations, such as oil refining, manufacturing of industrial chemicals, and all forms of metal working, were always early contenders for automation. We came up with the idea to apply automation in this oil extraction.