



Elaboration of Essential Oil from the Oregano for Medicinal Use Sheet



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Abstract

The extraction and industrialization of the oregano oil in Ecuador can represent an important source of work, from the harvest to the transformation of the raw material into finished product. The oregano is a plant known from many years back and has always been used for medicinal purposes and is currently being used in many fields such as perfumery, gastronomy, toiletries; But its main use is in medicine. The work proposes a methodology that allows extracting the essential oil of the plant for different medical uses such as: anti - inflammatory, analgesic, antioxidant and antibiotic, being of social benefit representing an economic impact in its industrialization

Keywords

*Essential oil;
Medicinal plants;
Process;
Production;
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Introduction

The name "oregano" comprises more than two dozen different species of plants, with flowers and leaves that present a characteristic smell to "specious". The oregano is a perennial herbaceous plant, robust, with fleshy leaves and very fragrant, is used in many fields [1].

At an industrial level it is used in perfumery and toiletries, the medicine, the manufacture of anesthetics, sedatives, antispasmodics, antireumatic and expectorants.

In the meat industry is widely used as essences and / or natural condiments The province of Manabí possesses land rich in organic matter, this type of soils are the most favorable for the harvest of oregano and for being a wild plant grows without any complication [2].

Oregano oil has been the subject of scientific studies, has proved to be one of the most potent and effective antibiotics known to man, is natural, safe, does not create mutant strains, and eliminates bacteria of all types using only a small amount. It is also effective against fungi, parasites and viruses can be used externally and internally, it has no negative side effects alimentary [3].

At present, with the aim of improving health, people seek to become aware and change the way of life; this makes professionals take more interest in non-conventional medicines.

Natural medicine is based on the use of medicinal plants; this has taken a noticeable interest in the last century, when discovering very important and interesting pharmaceutical properties in plants that grow in natural ecosystems.

At the equator it is very common to hear from the ancestors the use of this particular plant. Oregano oil has been used for medicinal purposes for centuries, in our country only the leaf is used in drinks to calm cough and stomach damage, or as food condiment, noting that its origin when used in food was for That these will not cause indigestion and as a conservative.

One of the problems facing the pharmaceutical and food industry is the need to use natural products and in Ecuador there is no industry dedicated to the extraction of essential oil from oregano.

For all the qualities that it has of oregano, this plant represents the opportunity to generate employment to many communities and at the same time give an alternative of the consumption of products that do not affect health in a long time

Due to the great similarity of its flavor and aroma, it offers advantage to the common oregano as a condiment. Cooked or raw, fresh or dry, it can be used chopped to season pizzas, pastas, meats, fish, salads, etc.

In the Dominican Republic more than 800 families benefit from the distillation of oregano oil, so that a quintal of oregano valued at 2,000 pesos (\$ 16.00) can be squeezed a liter of oil and sold at 1,500 dollars to the United States [4].

Also in Mexico is already in commercialization this oil in different presentations, droppers, knobs and for food consumption. Oregano has been used since ancient times; so much is true that in Greek mythology tells that the herb was created by the goddess Aphrodite to make the human being happier. With the conquest of Greece by the Romans, its use spread throughout the empire and doctors of antiquity discovered its many benefits [5].

World production is distributed among exporting countries, where Mexico is the main producer of oregano worldwide with 35-40% of this production, 85% is exported to the US and 5% is exported to European and Asian countries. Turkey, is the second producer with 30% of the species (*Origanum onites* L.), Greece, with the third place 22.5%. (*Origanum vulgare* ssp) [6].

Research Method

Essential oils can be extracted by different methods such as: pressing, steam distillation, extraction with volatile solvents, enfleurage and with supercritical fluids. Steam distillation or trawling, hydrodistillation, hydro-diffusion or hydro-extraction is the most commonly used method.

Equipment for extracting essential oils at different scales Laboratory scale round, condenser, intermediate scale or bench with capacities between 5 to 50 liters, in addition the hydrodistiller-condenser generator is used.

For production on a pilot scale capacities range from 30 to 500 liters, and can be of two types: with 20 external generator or coupled to the hydrodistiller. They are made up of a symmetrical cylindrical hydrodistiller or of a height slightly larger than the diameter, the essential oil is collected from the Florentine and stored in another decanter.

In industrial scale productions capacity greater than 500 liters; Already used equipment for the extraction cpm are: boiler, water tank, gas tank, containers, condenser, cooling tower, separators, vaporizers, general structure and cold room.

Results and Analysis

To obtain the natural product was not used chemicals that affect health, were controlled pests and diseases by applying organic repellents doing a biological or natural pest management.

Spills of contaminants such as diesel or oil were avoided in the process, and threshing was done manually.

Encased was in new sacks avoiding any type of contamination, the obtained byproducts were incorporated to the field in a natural way.

Chemical analysis was carried out in the laboratory to verify the contamination of heavy metals and finally the raw material was stored in warehouses or certified plants.

The composition of essential oils was determined essentially the physical properties, solubility, density, rotary power and index of refraction and the chemical properties as acidity ester, acetyl and phenols.

A procedure for quality control of oils was presented, aiming to ensure that it possesses certain analytical characteristics, and that these are maintained with the required quality, the procedure for quality control is shown in figure 1.

As can be seen, sensory tests, physical and chemical tests were performed.

In the sensorial tests their smell, color, taste and appearance were determined, the physical analyzes (viscosity, density, refraction and melting point) were performed. The determined chemical analyzes were the acidity, saponification, ester, iodine, peroxides and unsaponification indices.

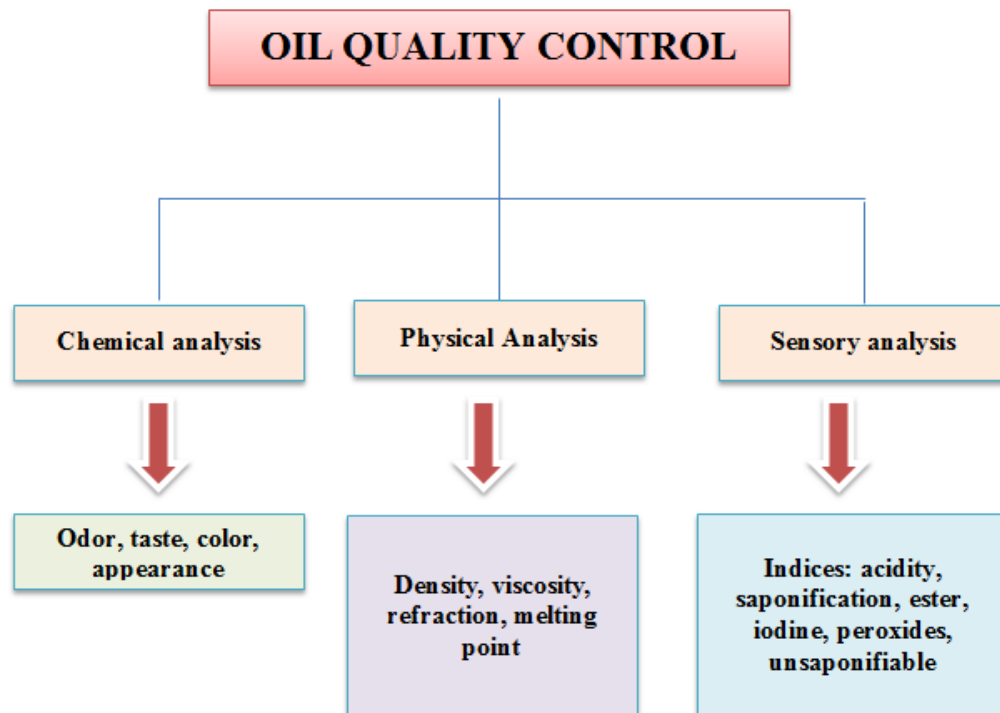


Figure 1. Procedure for quality control

A critical path for obtaining the product, shown in the flowchart of Figure 2, was determined, showing the steps to be taken from the receipt of the raw material to the final product.

Ecuador fundamentally the coastal area has the possibility to stimulate the entrepreneurs of the small industry to work to incorporate the product in the market, currently this production initiatives are distributed in the region of the Amazon, where they produce and market the product independently.

The way of production is easy and very demanded worldwide for its properties and its different uses this would help people living in rural areas that today have no job to be able to get involved in the production, collection, curing and packaging of the product and with it I To improve their social status in small scale, in addition that allows them to take advantage of areas that today are without any type of crop recovering them and making them useful and contributing to the local development of the territories of the coast.

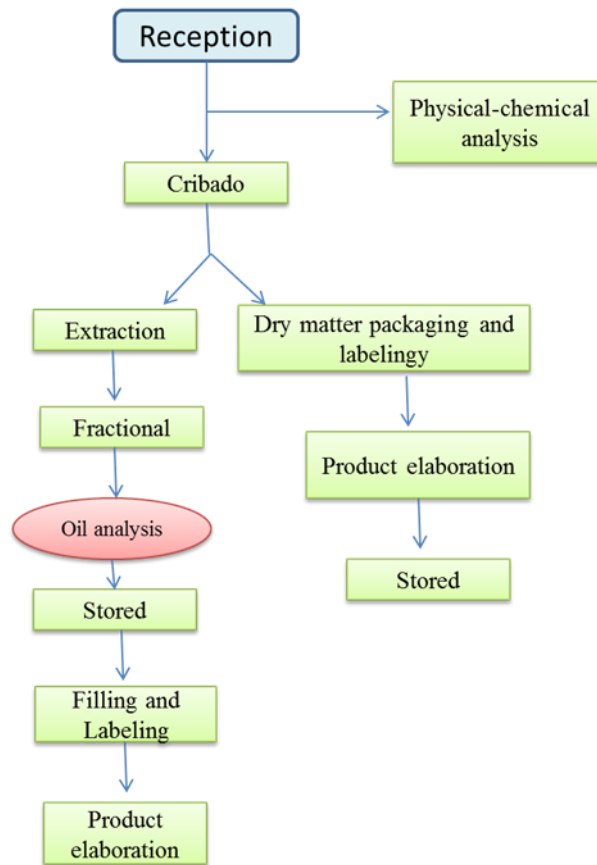


Figure 2. Flow diagram

In the sensorial tests their smell, color, taste and appearance were determined, physical analyzes (viscosity, density, refraction and melting point) were performed. The determined chemical analyzes were the acidity, saponification, ester, iodine, peroxides and unsaponification indices.

Conclusion

Ecuador presents all necessary conditions for harvesting oregano, the production of oregano oil is an easy process that can be implemented in any region of the country, is a product with many health benefits.

Carrying information campaigns about the benefits offered by this product would capture a good market of customers.

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References

1. C. Amadio, R. Medina, C. Dediol, M. Zimmermann, S. Miralles, Aceite esencial de orégano: un potencial aditivo. Rev. FCA UNCUYO. ISSN 0370-4661. Tomo 43. N° 1. Año 2011. 237-245.
2. García, D. F. (2009). MANUAL TÉCNICO DE CULTIVO ECOLÓGICO DE ORÉGANO (*Origanum sp. L.*). El Taller Asociación de Promoción y Desarrollo, Biblioteca Nacional del Perú.
3. GARCIA-PEREZ, Enrique; FERNANDO FRANCISCO, Castro-Álvarez; GUTIERREZ-URIBE, Janet Alejandra y GARCIA-LARA, Silverio. Revisión de la producción, composición fitoquímica y propiedades nutraceuticas del orégano mexicano. Rev. Mex. Cienc. Agríc [online]. 2012, vol.3, n.2, pp.339-353. ISSN 2007-0934
4. Guerrero L. A.; Ruiz L.; Rodríguez M.; Soto M.; Castillo A., Thyme hydroponics crops effect (*Thymus vulgaris L.*) on essential oil quality and yield. Revista Chapingo. Serie horticultura. ISSN 2007-4034 versión impresa ISSN 1027-152X. <http://www.scielo.org.mx/scielo.php>.
5. Ministerio de la Agricultura. Plan operativo 2014. Santo Domingo, 2014. <http://www.agricultura.gob.do/media/85074/Plan%20operativo%202014.pdf>
6. Mónica Alejandra Salamanca, M. Y. (2009). EXTRACCIÓN Y CARACTERIZACIÓN DE LA OLEORRESINA DEL ORÉGANO (*Origanum vulgare*). <http://repositorio.utp.edu.co/dspace/bitstream/11059/1839/1/6650282S159.pdf>.
7. Suleiman, O. M. E. (2017). Linear Deflection of Laminated Composite Plates using Dynamic Relaxation Method. *jiA*, 6(2), 1.

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