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Essentials Oils of *Laurus nobilis* from the West of Algeria

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Research Article

Abstract

Laurus nobilis is an aromatic plant, widespread in Algeria and widely used by local people as a source of spice and for its medicinal properties. The essential oil of this plant is the subject in this work a comparative study of this dune extraction HE three months: April, May and essential oil June. L'extraction was performed by steam distillation and performance the highest (1.5%) was determined in the month of May, in this month, the laurel plant was fully flowered in favorable soil and climate conditions for biosynthesis of the essential oils that make the yield increases considerably.

Keywords: *Laurus nobilis*; Algeria; Essential oil; Steam distillation; Yield.

1. Introduction

Laurus nobilis L. native to Mediterranean regions is also known as sweet bay, bay laurel, Grecian laurel, true bay, and bay. The dried leaves are used extensively in cooking, and the essential oil is generally used in the flavourings industry [1]. Laurel essential oil, also called laurel leaf oil or sweet bay essential oil, is also used for the preparation of hair lotion due to its antidandruff activity and for the external treatment of psoriasis [2]. *Laurus nobilis* L. belongs to the family Lauraceae, which comprises numerous aromatic and medicinal plants [3].

2. Materials and Methods

2.1 Plant materials

Laurus nobilis L. leaves was harvested in April, May and June 2014 from Mascara (Algeria), this leaves were dried for 10-15 days in darkness and at room temperature.

2.2 Isolation of the essential oils

Essential oils of leaves of *Laurus nobilis* is obtained by steam distillation of water, for 2 h 30 mn. The essential oil yield was estimated according to dry leaves by using the following equation [4]. R (%) = (m/mo) × 100 Where M: essential oil mass (g), MO: dry leaves and fruit matter mass (g), R: essential oil yield (%).

3. Results and Discussion

3.1 Profit for the extraction of essential oil

The HE was extracted from the leaves of *Laurus nobilis* by steam distillation is the standardized method for extracting a HE (Marie Elisabeth L) in a period of 3 months (April, May and June), their organoleptic characteristics and their yields also in each month are clearly variables which will be indicated as below (Figure 1).

3.2 Organoleptic properties of the essential oil

The organoleptic properties of the essential oils obtained by steam distillation laurel (appearance, color, smell and taste) are presented in the following Table 1.

According to international standards, HE must undergo different tests to confirm their qualities. The

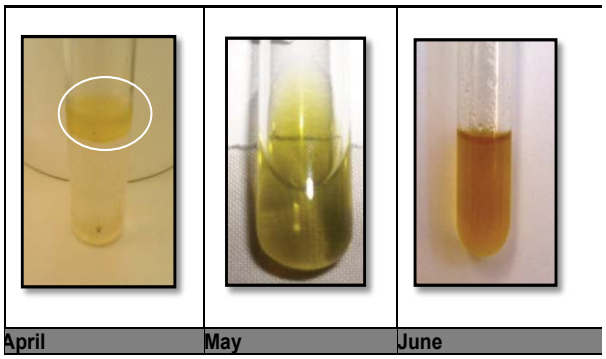

Figure 1. HE extracted from laurel leaves in the months of April, May and June.

Table 1. Results of some organoleptic properties of HE.

Organoleptic properties	Month		
	April	May	June
Appearance	Liquid, clear, mobile	Liquid , clear, mobile	Liquid, clear, mobile
Color	pale yellow	green	yellow sand
Smell	Fresh, powerful, aromatic, with spicy notes	Fresh, powerful, very aromatic, with spicy notes	Fresh, very powerful, aromatic, with spicy notes
Taste	Bitter, pungent	Very strong, bitter, fortementpiquant	Bitter, pungent

quality of an EST is judged through organoleptic properties as it depends in part on the distillation technique and / or the nature of the materials of the device and, through its physicochemical properties, it is also directly related Botanical materials [5].

An example of the structural model based on the harvest time was given by [6], who found a decreasing concentration of a hydrocarbon monoterpene in HE throughout the year, while the immediate successor oxidized metabolic increases. Therefore, volatile plant is subject to natural fluctuations in composition [5], which must be taken into account in the quality assessment.

During the sechage of plant material in the distillation and the subsequent handling of the oil itself, the HE components are particularly prone to risquesoxydatifs, chimiquesou transformations of polymerization reactions. The aging process usually comes with a loss of quality more or less pronounced [5,7]. Some factors that accelerate degradation such as oxygen, light (UV), contact with pro-oxidant metals (iron or copper), the presence of pigments such as chlorophyll, the presence of enzymes (lipases) and above all the warmth that will act as a catalyst for these reactions. Other factors will slow this phenomenon, including the contribution or the natural wealth of the oil vitamin E [8]. The color of the HE is determined by the dominant color of the substance leaves at harvest. The technique of extracting the oil also plays an important role in determining the color.

The results obtained in the months of April and June in accordance with accepted standards AFNOR. It is further certain reference books in aromatherapy speaking on HE de *Laurus nobilis* have cited the same organoleptic characteristics obtained in May regarding the green color of the ET. Moreover, certain items are presented in other colors: reddish yellow, dark gray ettransparente (no color).

3.3 Essential oil performance

The means of essential oils yields were calculated based on the dry plant material of laurel leaves and according to the harvest period (April, May and June) (Table 2).

From the figure above (Figure 2) 2au performance

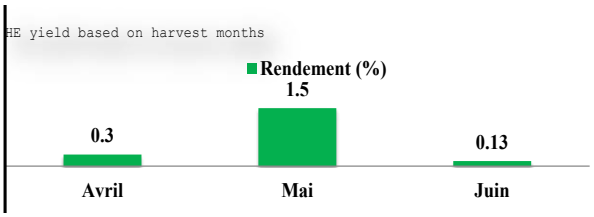

Figure 2. Histogram of yield HE.

Table 2. Content of HE during different period's harvest.

Harvest Month	Yield (%)
April	0,3
May	1,5
June	0,13

was largely variable, where HE extract in May this the highest yield of 1.5% compared with the other months of April and June which respectively presented a low yield of 0.3% and a very low 0.13%. The gasoline yield by steam distillation of laurel in the month of May is in the range [1-3%] has been described in the literature [2].

This result is similar to that obtained par [9]. Moreover, it is higher than that obtained by Kahouli [10] which is about 0.95%, and that obtained by Ouibrahim [11], which is about 1.3%. There are sometimes, similarities or differences between these results and those of other studies based on the quality of plant material used. It is noted that the yield is variable although the extraction technique is the same; this variability is likely due to the variation of the following factors: the stage of growth, soil and climate conditions, time of harvest, the time of harvesting drying. Several works on the drying of aromatic and medicinal plants show considerable changes, especially in quantitative terms, the level of essential oils. But a plant if it is not dried in good conditions, it may degrade and therefore the loss of its entire essential oils [12].

Irrigation has a positive effect on vegetative growth. It is shown that the deficiency or excess of water has a negative effect on the yield of essential oils. The percentage of the volatile oil increased from 1.4% (for the period of long days) to 0.7% (during the period of

short days) [13]**.** The essential oil content also depends on the time of harvest. The leaves should be collected before and during flowering, because according [14], after flowering, 70% essential oils evaporate into the air. In May, the laurel plant was fully flowered in favorable soil and climate conditions for biosynthesis of the essential oils that make the yield increases considerably.

4. Conclusion

The difference that emerged in the organoleptic characteristics within three months is mainly due to plant material since the extraction technique and equipment have been set. The health of the plant growth stage, habitat, climate, soil factors, the harvest time also the altitude of the leaves and the drying time can quantitatively and qualitatively affect the chemical composition in particular compounds aromatic, they are generally responsible for the organoleptic characteristics of the HE.

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