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Phytochemical Study of *Laurus Nobilis* in Syria

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ABSTRACT

This study was made to recognize the microscopic formation of *Lauraus Nobilis* leaves, which were collected from different places from Tartous, Syria. And the results showed: fibres and sclereids, oil cells, vessels, stomata and epidermis.

Later, six extracts were obtained by using six different solvents: ethanol, methanol, n-hexan, acetic acid, chlorophorm, dichloromethane, these extracts were used for TLC analysis which showed that the *L.nobilis* contain: limonien, 1,8 cineol, linalool, terpinol.

A part of the extracts were used for the chemical tests by using the suitable reagents that resulted the presence of Flavonoids, Alkolids and Tannins.

KEY WORDS: *Laurus nobilis*, Essential Oil, Microscopic Study, TLC.

1. INTRODUCTION

Laurus Nobilis, which belongs to the family of Lauracea consists of 11 flowering families, 70 species and more than 2500 species (Ballero, 1994). Known as the famous cultivar grows naturally in Mediterranean countries, and is widely spread in the Syrian coast, especially in the area of Kasab. This plant is useful in all its parts. It contains limonien, 1,8 cineol, linalool, terpinol (Fischer, 1979; Harborne, 1999). Flavonoids, Alkolids and Tannins (Appendino, 1992). The laurel branches since the Roman period are used in the wreaths, and the leaves are fresh or dried as a kind of seasoning in cooking to take advantage of the distinctive aroma (Bruni, 1997; Baratta, 1998). The laurel oil is used in the manufacture of natural soap, Laurel soap is a distinctive Syrian product, concentrated in Aleppo and in the vicinity of it and producing olive oil.

In addition to the industrial importance of laurel it has been used in alternative medicine for thousands of years. Due to its wide spread in our region and the fact that it is a primary material used in the medical field, it was an incentive to conduct an in-depth study on this plant and its components for investment in the medical field. Studies have shown that laurel leaves and fruits contain volatile aromatic oils, as well as three triglycerides (oleic acid, lactic acid, mersic acid and lauric acid). They also contain calories, fiber, carbohydrates, proteins and vitamins (Matsuda, 2002; Dadalioglu, 2004). So the laurel increases digestive juices, activates the liver, helps to break down food such as meat, lowers blood cholesterol, regulates menstrual pain, relieves muscle ache, strengthens skin, cleanses urinary tracts, kills germs, strengthens nerves and hair and reduce blood sugar (Loi, 2004).

2. MATERIALS AND METHODS

Laurus nobilis: The leaves where collected in August 2016, from different places in Tartous Syria. The study was carried out at the department of pharmacognosy and biology, faculty of pharmacy, Al Andalus University, Tartous, Syria.

Plant extracts: Laurus leaves were air dried in the shade for two weeks at room temperature 20-25^{0}C, then were dried in an oven at 40^{0}C for 15 minutes every day for a week until the stability of weight and then were grinded to a fine powder in a mechanic grinder.

Samples of 10g from the powdered material were extracted with 100 ml of the following solvents for each sample: methanol, ethanol, chloroform, dichloromethane, n-hexane and acetic acetate, the process lasted 18 hours every day for three days, by steeping method. The extracted fraction (1g: 10 ml), following filtration with cotton, then were maintained at +4 C until being used at the TLC analysis and chemical tests (EMEA, 2006).

Essential oil extraction: Samples of 100 g of the dried leaves were subjected to hydro distillation using 400 ml of distilled water, the process was obtained by Clevenger-type apparatus for 4 hours, and the produced oil was saved in sealed glass vials at 4-5^{0}C.

Microscopy tests: It was made several cross-sections in fresh plant fruits to study the structure and shape of leaves layer's. this study used water detectors. After that the specimen was examined by light microscope that objective lens 10X and then by magnification 40X to identify components and layers (ICH, 1996).

Chemical tests: It was used reagents sedimentation Dragendroff's, Mayer's, Wagner's and Bitter acid for detection of Alkolids. And for the detection of Cardioactive glycosides we used kedde, Baljet and keller-kiliani interaction. As well as, Wilson-Tauback, Shinoda and Pew interaction to detect Flavonoids and to detect tannins we used lead acetate and ferric chloride. Finally, applied Borntrager and Shouteten interaction to detect Anthraquinones.

TLC analysis: A mobile phase of Toulon and acetic acid (7:93) v\v was used, the stable phase of silica gel and the detector was a mix of 1g vanillin and 99g of (ethanol 9% + sulfuric acid 1%) (Awang, 2002; Barrett, 2008; Blumenthal, 2002).

3. RESULTS AND DISCUSION

Essential oil extraction: Each 100g of leaves was contained 2 ml of essential oil. The yield was 6 ml.

Microscopy test: Under light microscope we found some diagnostic characters.

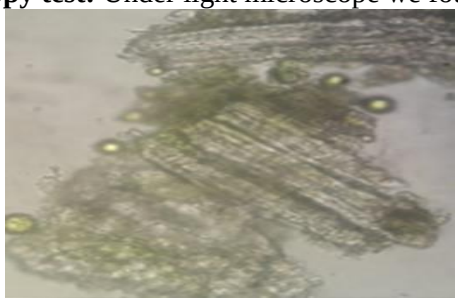

Figure.1. Sclereids

Figure.2. Fiber

Figure.3. Covering trichomes: they have uniseriate multicellular

Figure.4. A group of vessels from a vein

Figure.5. Upper epidermis in surface view with part of the underlying palisade

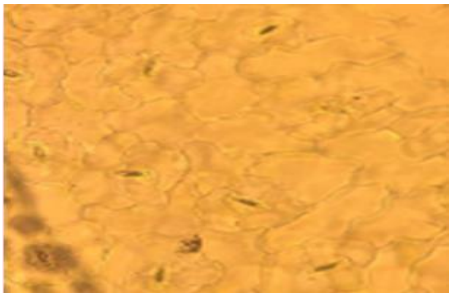

Figure.6. Lower epidermis in surface view with paracytic stomata

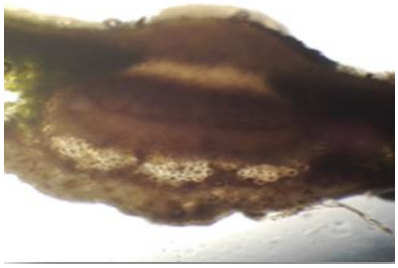

Figure.7. Vessel Bond

Part of the lamina from near the margin, showing the thick cuticle lower epidermal cells with thickened walls, a large oil cell and sclereids in the mesophyll figure.8.

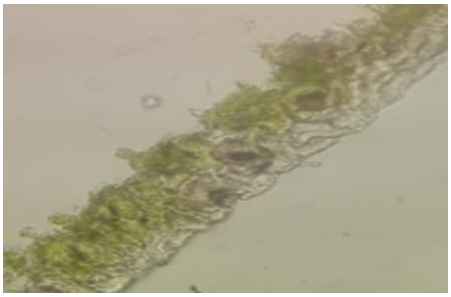

Figure.8. A large oil cell and sclereids in the mesophyll

Table.1. Chemical tests results

Alkolids	Dragendroffs	Mayers	Wagners	Bitter acid
	+	+	+	+
Cardioactive glycosides	kedde	Baljet		keller-kiliani
	-	-		-
Flavonoids	Wilson-Tauback	Shinoda		Pew
	+	+		+
Anthraquinones	Borntrager	Shouteten		
	-	-		
Tannines	lead Acetate	Ferric chloride		
	+	+		

TLC analysis: After the elution, we applied the reagent on the fixed phase and the results were read under Uv at 365 nm and at 254 nm.

The study showed that the extracts of laurel leaves contained linalol, lemonine, 1, 8 cinol and terpenol.

Then Retention time for the discovered compounds was calculated as following:

$$R_f = \frac{the\ distance\ that\ the\ compound\ crossed}{the\ distance\ the\ solvent\ crossed}$$

And the results was the following:

- Terpinol (0.219cm)
- Linalol (0.342 cm)
- 1,8 cineol (0.474 cm)
- Limonene (0.961 cm)

4. CONCLUSION

This study showed many characters elements in plant under microscope like Sclereids, Covering trichomes, underlying palisade, paracytic stomata and large oil cell (Betty Jackson,1990), and the chemical tests showed apresenceing alkolides, flavonides, tannins and essential oil (Trease & Evans Pharmacognosy Saunders, 2008). The essential oil was obtained from 400g of leaves 6 ml and the TLC analysis showed that the extracts of laurel leaves contained linalol, lemonine, 1,8 cinol and terpenol which were compared with standard of this substances to calculated retention time.

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