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Laurus nobilis FROM ALGERIA AND IMMUNE RESPONSE

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Abstract. Laurusnobilis 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 native to western Algeria is the subject of our study. The essential oil extraction was performed by steam distillation, the yield obtained from leaf is (1.5 %) by gavage Wistar rats males weight between 100g 80et were infected with Salmonella then treated with a dose 1 g / kg of the essential oil. In the day of sacrifice of the rats some parameters were determined: hemoglobin concentration (Hgb); haematocrit (Hct) and lymphocytes (white blood cell). The result shows the therapy of this magic plant *"Laurusnobilis*».
***Keyword**:* Laurus nobilis, steam distillation, essential oil, hematology, Wistar rats.

Introduction

Laurusnobilis 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 [FERREIRA *et al.,* 2006, BUTNARIU, *et al.,* 2011, FERENCZ, *et al.,* 2012, BARBAT, *et al.,* BUTNARIU, *et al.,* 2015b, 2013, BUTU *et al.,* 2014, BUTNARIU, 2012].

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 [DEMIR *et al.,* 2004].

Material and methods

Material

Plant materials: *Laurus nobilis* L. leaves was harvested in April and June 2014from Mascara (Algeria), this leaf was dried for 10–15 days in darkness and at room temperature.

Isolation of the essential oils: Essential oils of leaves of Laurus *nobilis* is obtained by steam distillation of water, for 2h 30mn.

Bacterial strains: *Salmonella* sp. was from collected waste water, identified at the Bioconversion Laboratory, Microbiological Engineering and Safety, University of Mustapha Stambouli– Mascara (Algeria).

Animals: Specic pathogen–free (SPF) male Wistar–Unilever (WU) rats were obtained from the farm of university of Mascara (Algeria).

The animals, 5±8 weeks of age, were housed individually in macrolon cages, 1±2 weeks prior to inoculation. Drinking water and conventional diet were provided ad libitum. The breeding colony of the animals was prescreened/ monitored for endogenous pathogenic viruses and bacteria, and was negative.

Methods

The essential oil dose that *Laurusnobilis* L. selected is 1 g/kg (each rat receiving by gavage 1 mL of a solution: essential oil diluted in physiological saline).

The study involves 21 rats after a period of habituation. Rats were weighed and identified by marking on the tail.

The animals were divided into three groups of seven animals each, one of which is the control group, and the rats were left without power for 24 hours before testing.

Group 1: received tap water as witness.

- Group 1: Received 1 mL of

bacterial suspension the first day and in the six days after, received 1 mL of tap water;

- Group 3: received 1 mL of bacterial suspension and then 1 mL of the aqueous solution the first day, and after six days, only received 1 mL of the aqueous solution;

Hematology

As an indicator for (systemic) infection, hematology for each rat was determined on blood samples, obtained on the day of sacrifice, anticoagulated with K3EDTA.

The following parameters were determined: hemoglobin concentration (Hgb); haematocrit (Hct) and lymphocytes (white blood cell).

For the white blood cells are counted by the manual method of reading the smear (400 mL of acetic acid) with 20 µL of the whole blood using a swimming cell; Whereas the hematocrit is determined on a microhematocrit tube, which is very practical.

The tube is then centrifuged and the measurement of the height occupied by the red blood cells relative to the total height gives the percentage of hematocrit, the percentage of the latter being divided in three to give the hemoglobin level

Results and discussion

The immune system includes certain types of white blood cells.

It also includes chemicals and proteins in the blood, such as antibodies, complement proteins, and interferon.

Some of these directly attack foreign substances in the body, and others work together to help the immune system cells.

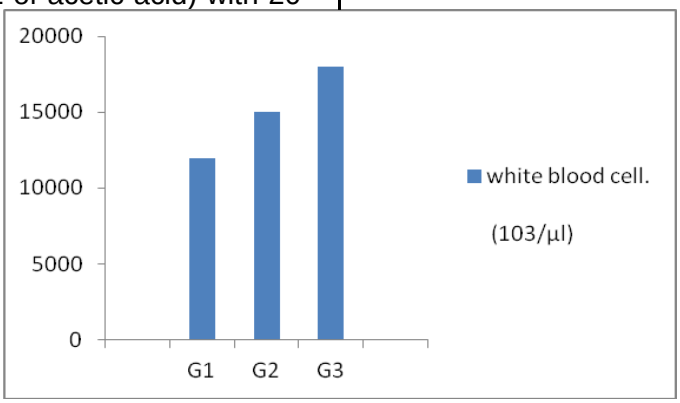

Figure 1. White blood cell

The immune system protects the body from possibly harmful substances by recognizing and responding to antigens.

Antigens are substances (usually proteins) on the surface of cells, viruses, fungi, or bacteria.

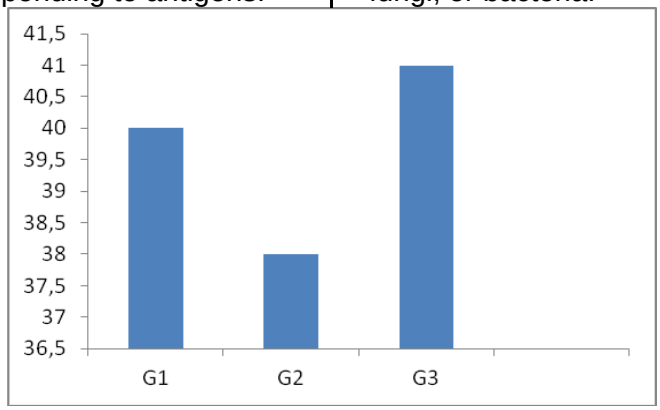

Figure 2. Hematocrit (%).

Nonliving substances such as toxins, chemicals, drugs, and foreign particles (such as a splinter) can also be antigens.

The immune system recognizes and destroys substances that contain antigens.

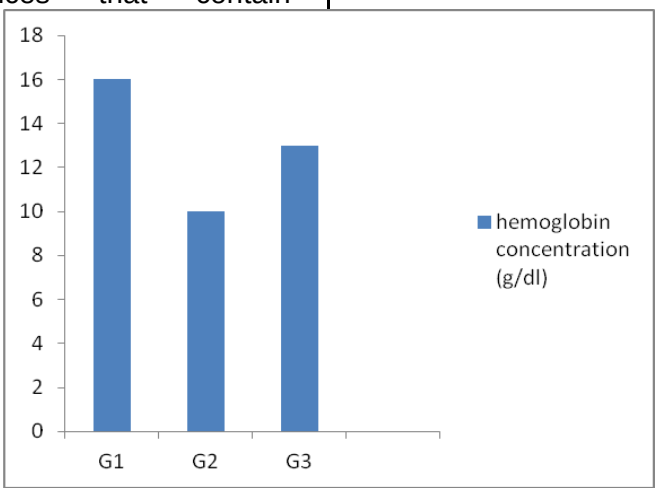

Figure 3. Hemoglobin (g/dl).

The hematological results obtained reveal the following observations: a significant decrease in the hematocrites: HCT, hemoglobin (HGB), which explains the consequent hemolytic anemia and an increase of the white blood cells especially for the group A, that is to say An immune response.

Plant derived extracts have been historically considered as important alternative remedies for enhancing immune status and prevention and treatment of chronic diseases [ZAYNAB SAAD ABDEL GANY, 2010, PETRACHE, *et al.*, 2014, BUTNARIU, *et al.*, 2016, BUTU, *et al.*, 2014a. BUTNARIU *et al.*, 2015a]

The toxicity of this essential oil could be attributed to its compounds, the main trepan found was 1, 8–cineole [MEDIOUNI–BEN JEMÂA *et al.*, 2013]. *Laurus nobilis* L. belongs. to the family Lauraceae, [BARLA *et al.*, 2007, ZAYNAB SAAD ABDEL GANY, 2010].

Conclusions

The laurel or bay laurel, is an evergreen tree widespread in the Mediterranean area and Europe, and as a folk medicine, the decoction or tea of bay leaves is often used as a carminative, intestinal and gastric antispasmodic, against diarrhea, for rheumatic pains, in diseases of the respiratory tract, as a cough sedative, to treat asthma and cardiac diseases.

Previous phytochemical investigations have led to isolation of several classes of secondary metabolites of laurel leaves, particually sesquiterpene lactons, alkaloid, monoterpene and germacrane alcohols, flavonoids and glycosides.

Bay leaves are commonly used as a spicy, aromatic flavoring for soaps, fish, meats, stews, puddings, vinegars, and beverages.

The essential oil is used by the cosmetic industry in creams, perfumes, and soaps.

Many of the important compounds have been shown to possess various pharmacological effects, with antimicrobial, immunomodulating, and cytotoxic activities

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