

Phytochemical Study of Selected Medicinal plant, Solanum Nigrum, the Algerian Desert

Zemali Djaafar, Ouahrani M. Ridha*

Laboratoire de Valorisation et Technologie des Ressources Sahariennes,
Département Sciences de la Matière, Institut des Sciences et Technologie Centre,
Universitaire Ouargla, Ouargla, Algérie

*E-mail address: Djaafarzemali2013@gmail.com

ABSTACT

Solanum Nigrum plant contains many compounds of High utility, such as: alkaloids, saponin, and others. Through this study in the field of plant chemistry that we can know all the components of the various parts (leaves, twigs, flowers, fruits and roots) of the plant Solanum Nigrum, and enhance the classification of the operations during the disclosure of the components of the plant and contents of secondary metabolism and some of which adopted the newly particularly alkaloids and terpenes as genetic indicators .

Keywords: Medicinal plants; Solamun Nigrum; Phytochemical analysis

1. INTRODUCTION

The world is witnessing in recent years, a growing interest in medicinal plants, which are a natural source of treatment in the form of traditional preparations or effective pure and is characterized for chemical drugs effectively and high therapeutic as well as the lack of side effects. Medicinal plant occupies a special place in economic production, especially at the present time Where it is considered one of the most important strategic materials in the pharmaceutical industry or rather nucleus of the prefix in the chemical composition of the drugs.

Shopping also medicinal and aromatic plants or parts thereof, which are used in the pharmaceutical industry or export its outside the country, either Dehydrated or partially manufactured according to the specifications set forth in the constitutions of countries imported drugs its. And thus increased attention on the current scientific thinking in treatment using medicinal plants, with the new logo back to nature [1,2]. Given the wealth of Algeria from a variety of plants, especially medical and distributor to the different environments, climates and topography of several, each with its own characteristics.

And exceeded difficulties-Has been selected plant Solanum nigrum that has not been studied before, and very little information about them, despite the spread in Algeria, used widely in the treatment traditional folk among residents sparked my curiosity Scientific is the fact that its usefulness in the medical treatment of certain diseases, and the use of some of them in pain in the stomach and intestines, as well as for the treatment of skin diseases, and

therefore conducted this pilot study [3]. To study the chemical content of the different members of the plant (leaves, twigs, flowers, fruits and roots).

2. MATERIALS AND METHODS

2. 1. Description Selected plant

Herbaceous plant Berri around me, belongs the Solanaceae family, Consists of lobes oval-shaped, white flowers, and the paper is simple and the edge of the oval-shaped full, leg thick branched, and the roots of caruncle large, consisting of fruits small bays, and have a black, or yellow, or green, fruits ripen in the fall, and have a color Dark purple green [4].

2. 2. Collection of plant specimens and configured

Divided Before starting the drying process in the different members of leaves, twigs, flowers, fruits, roots, after purification of insects, gravel and soil, and then publishes various members in the shade on a thick canvas in the form of thin layers, then flips twice a day, not exposed to sunlight for a long time and even to make sure that the constant weighing and also facilitates the process of drying, crushing and prevents the plant from rotting.. Join Complex October 16, 2006 for a period of 15 days to dry the leaves, twigs and flowers either for fruits and roots of 30 days.

2. 3. Phytochemical analysis

Rely mainly on chemical reagents for the test, and the importance attributed to the exploration and initial inventory of natural products in different members of the same plant this study was carried out in the laboratory (appraisalment and upgrade of resources Sahara) at the University of Ouargla Algeria. This study took a full year, and began to reap the plants during the autumn of 2006, and after drying and crushing tests were conducted on dry samples from different members of the plant using the following detection methods .

2. 4. Test for alkaloids

About 0.5 to 0.6 g of the methanolic plant extract was mixed in 8 ml of 1 % HCl, warmed and filtered. 2 ml of the filtrate were treated separately with both reagents (Maeyer's and Dragendorff's), after which it was observed whether the alkaloids were present or absent in the turbidity and/or precipitate formation [5] .

2. 5. Test for saponins

0.5 g of the methanolic plant extract was dissolved in boiling water in a test tube. Test cooling aqueous extracts were mixed vigorously to froth and the height of the froth was measured to determine the saponin contents in the sample. 2.0 g of the powdered plant material was boiled in distilled water in a test tube in boiling water bath and filtered. 10 ml of the filtrate was mixed with 5 ml of distilled water and was shaken vigorously to the formation of stable persistent froth.

The frothing was mixed with 3 drops of olive oil and shaken vigorously for the formation of emulsion thus a characteristic of saponins [6] .

2. 6. Test for tannins

The 0.5 g of powdered sample of each medicinal plant leaves was boiled in 20 ml of distilled water in a test tube and then filtered. The filtration method used here was the normal method, which includes a conical flask and filter paper. The 0.1% FeCl_3 was added to the filtered samples and observed for brownish green or a blue black coloration, which showed the presence of tannins [8].

2. 7. Test for cardiac glycosides (Keller-Killani test)

5 ml of each methanolic plant extract was mixed with 2 ml of glacial acetic acid containing one drop of ferric chloride (FeCl_3) solution, followed by the addition of 1 ml concentrated sulphuric acid. Brown ring was formed at the interface which indicated the presence of deoxysugar of cardenoloides. A violet ring may appear beneath the brown ring, while in the acetic acid layer, a greenish ring may also [5].

2. 8. Test for coumarins

0.5 g of the moistened methanolic plant extract was taken in a test tube. The mouth of the tube was covered with filter paper treated with 1 N NaOH solution. Test tube was placed for few minutes in boiling water and then the filter paper was removed and examined under the UV light for yellow fluorescence indicated the presence of coumarins [7].

2. 9. Test for terpenoids

An aliquot 0.5 ml of methanolic extract was mixed with 2 ml of CHCl_3 in a test tube. 3 ml of concentrated H_2SO_4 was carefully added to the mixture to form a layer. An interface with areddish brown coloration was formed in the presence of terpenoids, as positive result [6].

2. 10. Test for flavonoids

To the substance in alcohol, a few magnesium turnings and few drops of concentrated hydrochloric acid were added and boiled for five minutes. Red coloration identifies the presence of flavonoids (Shinado's test). just gradually throughout the layer [5].

2. 11. Test for Volatile Oils

To the thin section of the drug, add alcoholic solution of Sudan III. Red colors obtained by globules indicate the presence of volatile oil [9].

3. RESULTS

After detection tests for active chemicals noted some of the active substances that represent specifically in alkaloids and saponins in different parts of the plant with a complete absence of volatile oils. In general the results of various tests seem obvious in the detection of tannins and terpenes, glycosides, coumarin, and based on the results shown in the Table 1 below.

Table 1. The results of the testing for the active substances in the various members of the Solanum Nigrum plant.

Member Active substances	Leaves	Twigs	Flowers	Fruits	Roots
Alkaloids	+++	++	++	+++	+
Saponins	+++	+	+	++	+
Tannins	++	+	+	+++	-
Glycosides	+++	++	+	++	-
Coumarins	++	++	-	++	-
Terpenoids	-	+	-	++	+
Flavonoids	+++	++	+	++	-
Volatile oils	-	-	-	-	-

bearing in mind that :

(-): Indicates to the absence of an active substance.

(+): Indicates the presence of phytochemicals small quantity .

(++): Indicates the presence of phytochemicals medium quantity .

(+++): Indicates the presence of phytochemicals large quantity.

4. DISCUSSION OF RESULTS

Given the results of the survey phytochemical conducted on plant Solamun Nigrum, which belongs to the family Solanaceae for detecting chemicals 8 families of alkaloids and saponins tannins and Glycosides, Coumarins, Terpenoids, Flavnoids, and volatile oils. This is after the plant has been divided for its members (leaves, twigs, flowers, fruits and roots). A total of five (5) samples Fady plant to get 26 positive test among 40 test any ratio of 65 %.

This percentage refers to planting SolanumNigrum area Coenen Valley State (Algeria), an important source of natural products, and therefore is a good ground to separate the types of chemical compounds, and returned to a suitable environment for the growth of this plant.

When examining the chemical tests for plant SolanumNigrum to note the presence of alkaloids and saponins in all members of the plant, with a complete absence of volatile oils.

The test was positive when the disclosure of dragons and glycosides and flavonoids except roots and coumarins except flowers, roots and turbines except leaves and flowers.

Assessment to discuss these results, and based on the results of the qualitative detection of members of the plant that contain alkaloids, which are of great importance in the pharmacy, which represent the most important sections of secondary metabolism and is manufactured from specific genes.

Which is considered the modern era as indicators of the genetic operations contribute to the classification of plants, and can stand up to the factions that promote this proposal Such as the alkaloids in some plant species referred to by references from ancient-Such as Scrophulariaceae, Solanaceae, Leguminosae.

As well as another active material that have been studied in the past two decades, and are saponins, which are used for the preparation of pharmaceuticals for the treatment of many diseases.

5. CONCLUSION

This is certainly a *Solanum Nigrum* plant that belongs to the family Solanaceae. Her medical and economic benefits is very important in financial terms, because they are rich in active compounds as evidenced by the positive results of chemical tests, which amounted to 65 %. He also gave the results of the detection of the active compounds in the presence of alkaloids and saponins in all members of the plant with no plant volatile oils. This seems more pronounced in the disclosure of the results of tannins, glycosides and flavonoids that resides in all members of the plant except the roots either turbines available in fruits and is available in stock and mainly due to the quality of the materials tested and places manufacture and accumulation [10].

Although the results were acceptable results which did not touch it references, but requires the application domain to join other disciplines and research, and the methods and techniques of separation and purification.

References

- [1] Hostettmann K., Mallard M., Mamburgon M., *Phytochemistry of plants used in traditional medicine*. Oxford University Press, 1995, pp. 3-27.
- [2] Arnason J. T., Romes J. Y., *Phytochemistry of medicinal Plqntsmpleunium*, 1995, pp. 1-25.
- [3] P. Ozenda, 1991, p. 379, 380; Quezel-Santa 1963, p. 822 Et 825; Le Flo'h 1983, pp. 221-222.
- [4] P. Ozenda: *Flore de Sahara*, Centre National de la Recherche Scientifique, Paris 2nd.1990, p. 177-179.
- [5] Harborne J. B., *Phytochemical methods*, London, Chapman & Hall Ltd., 1973, pp. 49-188.
- [6] Sofowora, *Medicinal plants and traditional medicine in Africa*, Vol. 2. Spectrum Books Ltd, Ibadan, 1993, p. 288.

- [7] Trease G. E., Evans W. C., *Pharmacognosy* 2nd 561 Edn. Braille Tridel and Macmillan Publishers, 1989.
- [8] Shihata I. M., *A Pharmacological study of Anagallis arvensis*. M.D. vet. Thesis Cairo University, 1951.
- [9] Salle J. L., *Daro Therapies essential oils Synthesis and intro ct Pelletier*. J. Has sympaterapions. Edit-Frisian-Roche, Paris 1991.
- [10] Richter G., *Metabolisme des végétaux, physio physiologie et Biochimie*, 1976, pp. 376.

(Received 22 September 2013; accepted 26 September 2013)