Sys Rev Pharm 2020; 11(2): 458 – 461
A multifaceted review journal in the field of pharmacy
E-ISSN 0976-2779 P-ISSN 0975-8453

Phytochemical and Biological of *Anthemis nobilis* (Asteraceae family) a Native Herbs of Iraq

Iman Husam Mohammed[1*], Ashwaq Talib Hameed[2], Hanan Fawzi Salman[3]
[1,2,3]College of Education for Women, University Of Anbar, Al-Anbar, IRAQ
E-mail: ashwaq.talib@uoanbar.eru
haninfawzy37@yahoo.com

Article History: *Submitted: 25.11.2019* *Revised: 18.01.2020* *Accepted: 20.02.2020*

ABSTRACT
This study included the chemical detection of some active raw compounds extracted from the vegetative part of chamomile (*Anthemis nobilis*) from the Asteraceae family, Which is one of the important medicinal plants that are prevalent in many areas in Iraq and which have been used to treat many diseases, as some of the main chemical ingredients were detected in the vegetative part (multiple phenols, alkaloids, glycosides, tannins, flavonoids, saponins). The owner of the largest amount of this plant was phenols, as it amounted to 33.5%, which was in the form of an brown precipitate, while the smallest amount of glycosides was 0.64% with a red precipitate shape. Also, the chemical contents, vitamins and mineral elements of this plant were revealed. Potassium was the most quantitative ingredient in chamomile which amounted to 302.7 mg. The least amount of this plant was for the manganese component which was 0.16 mg. As for vitamins, vitamin C was the largest amount which amounted to 86.9 mg, followed by vitamin A with 440 micrograms, In addition, the study included using the aqueous extract of chamomile plants with two concentrations (80-100%) to study their effect in reducing the percentage of sugar outside the living body in mice. There were significant differences between concentrations and control and the best concentration was 100%.

Keywords: *Anthemis nobilis*, phenols, glycosides, diabetes mellitus
Correspondence:
Iman Husam Mohammed
College of Educaation for Women, University of Anbar, Al – Anbar, Iraq
E-mail: ashwaq.talib@uoanbar.eru
DOI: 10.5530/srp.2020.2.69

INTRODUCTION
Medicinal plants are among the important plants that have significance in treating diseases and preserving human health, which scientists and researchers have taken care of in the field of drug manufacture. Treatment with medicinal plants occupies a large area, which has the ability to treat many different internal, skin and other diseases because it contains many active substances with a pharmacological action (Oboh and Abulu, 1997). Chamomile is a of the Asteraceae (Compositae) family and is known as the gold flower (Chakravarty, 1976). It is a herbaceous plant and has a height ranging between (20-50) cm and has white flowers with a yellow center, and the stem is many branches (Kabesi, 1998). Chamomile *Anthemis nobilis* is one of the most popular medicinal plants available for its abundance in our country. Its price is cheap and its English name is Anthemis. It is a genus of plants compound flowers Camomilo or golden chamomile,

It works to reduce thermal stress and is used as an anti-bacterial, sedative, stimulant, nerve tonic and digestive aid because it contains many compounds such as Triene, Sugar, Bitter prieiple, Quercetrine Acid, Anthemol Falcarindiol, Mositol, Tridecatriyne, Aatheic Acid, Volitile oil, Resin, Acid Tannic and Cholin Sonobilin Hydroxy(Betris,2077). Chamomile is also used in the treatment of many diseases related to the intestine and stomach, because it contains azulene oil(Khattab and Omer, 1999). Eastern and Southern Europe is considered to be its original habitat, as this plant grows in multiple regions in Iraq, especially in the sedimentary plain areas and in the province of Anbar , and due to its great medicinal importance it has been cultivated in many areas(Majed and Jameel,1988;AL-katib,1988). It also serves as the crowning king on the throne of aromatic and medicinal plants, and is an important source in obtaining medicine against many disease states, Where the essential oil is extracted with a ratio of 0.5-1.5% of the dry weight of its flowers (B.H.PH, 1992; Maqboul and Al-Sakit,1995). It is also useful for treating rheumatism, cold, nerve pain, headache and anti-inflammatory (Abu Zaid, 2001). The study aimed at the qualitative and quantitative detection of some effective chemical compounds in the vegetative part of the plant and testing the effect of the aqueous extract with two concentrations of 80 and 100% on the Rate of sugar in mice.

MATERIALS AND METHODS
Plant sample: The plant material were collected from April up to mid-June 2019 from khaldeia field in anbar - Iraq.

Chemical detection: To study chemical properties, standard methods were used to determine vitamin C, it was measured using 2-6– dichloro andofenol and vit. A (AOAC, 1995). The phosphorous measured by photometry includes a spectrophotometer at a wavelength of 650 nanometers, As for calcium, iron, sodium, potassium, manganese, zinc and copper, it was measured by the Perkin –Elmer (2382) atomic absorption device in the laboratories of the Faculty of Applied Sciences / Hayat University - Erbil, according to the approved method (Amarti *et al*., 2011).

Phytochemical analysis: The presence of some active compounds in the pulverized samples of plants were determined using standard methods such as (phenolic, alkaloids , glycosides, flavonoids, tannins and saponin (Omoregie *et al*., 2010).

Biological experiment: Aqueous extract of 50 g of plant chamomile powder was prepared and put in 250 ml of boiling water at a temperature of 70 ° C for 24 hours. Then filtered with filter paper and concentrated with a rotary evaporator until the extract dried out and then weighed the used concentrations shown below, Use in the

experiment 24 mice male adults and after a period of acclimatization and rest were determined the level of blood sugar in 80-140 mg/ ml before the introduction of the disease in it, then experimental diabetes was introduced in the animals of the experiment by injecting them with Alloxan monohydrated in a dose of 100 ml / kg of body weight(Jaouadi *et al*., 2014). Three random groups were isolated, food was banned for 12 hours and then dosed with aqueous extract using a micropipette according to the following concentrations: The first group was administered at a concentration of 80 mg / kg of body weight and The second group dosed 100 at a concentration of mg / kg of body weight, After two hours, blood samples were drawn from the mouse's vein (Mighri *et al*., 2010) and blood serum sugar levels were measured, and the process was repeated every two to 10 hours.

RESULTS AND DISCUSSION

Traditional medicine and medicinal plants have been widely used in most developing countries as a normative basis for maintaining good health (Bhattaram *et al*., 2002). He noted that more than 50% of the drugs currently available are plant derivatives (Jia *et al*., 2003).

Table 1: Qualitative and quantitative chemical content, vitamins and elements in every 100 g of vegetative part of *Anthemis nobilis*.

The chemical component	VitaminA	Vitamin C	Calcium	Phosphorus	Iron	Sodium	Potassium	Manganese	Zinc	copper
the value	440	86.9	120	42	10.8	12.6	302.7	0.16	0.22	0.50
measuring unit	Micro gram	mg								

The results showed in Table (1) the quantitative and qualitative content of vitamins and mineral elements of this plant per 100 g of the vegetative part, Where the element potassium recorded the largest amount of content in this plant, which amounted to 302.7 mg and was followed by other elements which are calcium, phosphorus, sodium, iron, copper, zinc, manganese, respectively, and manganese was the least amount of this plant, which amounted to 0.16 mg. Where it was observed that the proportion of potassium is higher than sodium, which is necessary for plants as enzymatic facilities that maintain osmotic pressure and water absorption and work to reduce cases of plant diseases, as it was found that they play a role in the metabolism process (Busattaa *et al*., 2000). As for iron, it is an essential element, as it plays with hemoglobin and fridoxin an important role in metabolic processes as well as a course in the processes of oxidizing proteins, carbohydrates and fats (Arabi,2017). As for the amount of vitamins in this plant, it ranged from the most, which is Vitamin C and the lowest, which is Vitamin A, as it reached 86.9 mg and 440 micrograms respectively, and for this the plant is an excellent source of vitamins, which are important antioxidants that protect the body from diseases and enhance immunity.

Table 2: The main chemical ingredients in the vegetative part of *Anthemis nobilis*

Effective compound	the color	Quantity%
Multiple phenols	Brown precipitate	33.5
Alkaloids	Orange precipitate	11.7
Clycosides	red	0.64
Tanin	Bluish green	0.68
Flavonoids	yellow	4.2
Saponins	foam	15

Table (2) also showed the results of the chemical detection of the basic compounds and active substances in the vegetative part (leaves, fruits, stem, flowers) for the chamomile plant (*Anthemis nobilis*). Which was revealed in this plant which are (multiple phenols, alkaloids, Clycosides, tannins, flavonoids, saponins) to compare them in quantity and color in different parts of the plant, saponin with the largest percentage present in this plant was 15% and was foamy, followed by multiple phenols that had a quantity of 33.5% and a brown precipitate, followed by alkaloids that had a quantity of 11.7% and an orange precipitate, then followed by flavonoids with a quantity It reached 4.2% and yellow, then followed by the tannins, which were bluish green with a quantity of 0.68%, and in the last place came the glycosides with the lowest amount of 0.64% and the red precipitate. Soap is distinct because it has foam in the presence of water, which is inferred from its existence, as many sources that showed its effective content have confirmed its existence in the form of Saponine as indicated by both (Majeed and Mahmoud, 1988; Karim and Qurran, 1986). Where it is widespread in parts of the plant where it is distinguished

by its bitter taste, it has importance in reducing cholesterol in the blood and as antioxidants (Al-Shamaa, 1989). As for tannins, they are phenolic compounds, characterized by their ability to precipitate alkaloids and protein, and are considered to be amorphous substances that dissolve in water and alcohol (Al-Darwish, 1983). Its importance lies in the fact that it is a source of energy that the plant consumes in the process of food metabolism and works as an anti-growth for bacterial and fungal. Aqueous extracts also contain flavonoids, which are one of the many water-soluble phenol compounds, which are antioxidants that possess effective free radicals and contribute to reducing the risk of heart diseases and have anti-inflammatory, anti-allergic, antimicrobial and antioxidant efficacy (Aiyelaagbe and Osamudiamen, 2009). The containment of plants by these active compounds makes them an important pharmacological value and multiple uses of these plants as medicinal plants (Muhammad et al., 2009). Figure 1 shows the aqueous extract of chamomile and its effect on glucose concentration in mice blood, The results showed that there were significant differences between concentrations and control, and the focus was 100% in the first place because of its great and strong impact on blood sugar, followed by the second concentration 80%., The results of this study were agreed with (Ibri *et al*., 2002; Tastekin *et al*., 2006; Twaij and Al Badr, 1988) on the ability of plant extracts and active substances to lower blood sugar, enhance pancreatic function and contribute as an aid. With insulin.

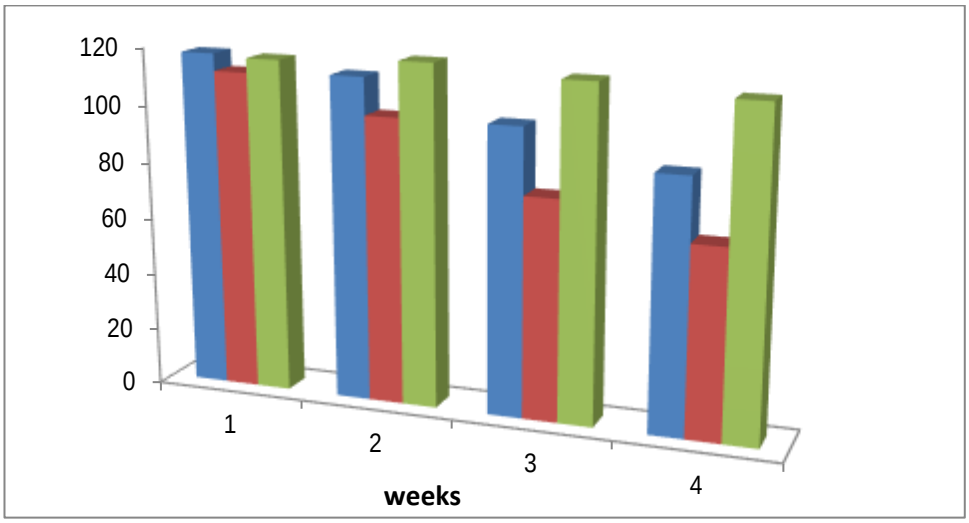

Figure 1: The effect of a golden chamomile aqueous extract on the blood glucose concentration in mice (interference: LSD P> 0.05 = 2.438). Red: Control, Blue: 80 Concentration, Green: 100 Concentration.

The incidence of diabetes is associated with a significant decrease in affected animals compared to healthy animals, and this leads to the influence of energy sources that come from carbohydrates, and in this way the animal will resort to using alternative sources of stock of fats and proteins (Jaspreet *et al*., 2003). Burcelain *et al*., (1995) stated that the hypoglycemic action of an extract of herbal plants in mice may be possible through insulin action or through another mechanism such as stimulating glucose uptake by peripheral tissues, and inhibiting the production of autogenic glucose in the liver and muscles. Ahmad and Abdul-hussian, (2016) during their study had expected from previous studies that the effects of blood sugar could be a result of improved use of peripheral glucose, as well as blood sugar activity may be due to inhibition of alpha-amylase activity(Iriadam *et al*., 2006). One treatment for diabetes is to reduce hyperglycemia after birth. This is done by inhibiting glucose uptake by inhibiting hydrogenated carbohydrate enzymes, α-amylase and α glycosidase in the digestive system. Inhibitors of enzymes delay the process of digesting carbohydrates and extend the time of digesting carbohydrates in general, which leads to a decrease in the rate of absorption of glucose and thus reduce glucose rise in plasma after eating (Tastekin *et al*., 2006; Rhabasa-Lhoret and Chiasson, 2004).

REFERENCES

1. Abu Zaid, A. N.(2001). Plants and Medicinal Herbs. Arab House for Publication and Distribution. Cairo, Egypt. p. 337-352.
2. Aiyelaagbe, O. O. and Osamudiamen, P. M. (2009). Phytochemical screening for active compounds in Mangifera indica leaves from Ibadan, Oyo State. Plant Sciences Research. 2(1): 11-13.
3. Al-Shamaa, Ali Abdul-Hussein (1989). Pharmacognosy and Medicinal Chemistry, Books House for Printing and Publishing, Beirut, Iraq.
4. Amarti, F., M. El Ajjouri, M. Ghanmi, B. Satrani, A. Aafi, A. Farah, A. Khia, A. Guedira, M. Rahouti& A. Chaouch, (2011). Composition chimique, activiteantimicrobiennne et antioxydante de l'huileessentielle de Thymus zygisdu Maroc. Phytotherapie.12(4) :311-318>

5. AOAC (Assoiation of official analytical chemical, 1995. Official methods of the association of official analytical , 16th ed., Methods analytical Chemists, Virginia, USA.
6. Bhattaram VA, Ceraefe M, Koshlset C, Vest M, Deundorf H.(2002). Pharmaco kinetics and bioavailability of herbal medicinal products. Phytomedicine; 9 (Suppl III): 1- 36
7. Boutros, Ghassan Youssef. (2007). The effect of using chamomile. Red pepper. Oats. Rice lizards. Nuclei of dates. The aqueous extract and the powder for each have some productive and physiological characteristics for broiler meat subjected to thermal stress. Doctorate thesis. Department of Animal Resources - College of Agriculture - University of Baghdad.
8. British Herbal Pharmacopeia (B.H.PH.).(1992). The Pharmaceutical Press. London. p. 50
9. Burcelain R. M., Eddouks J., Maur, J., Kande, R.and Assan Grirard J. (1995), Diabetologia, , 38, 283-290
10. C.Busattaa. P.S. Vidala, A.S, Popiolskia, A.J. Mossiaic. Parivab (2000). Short communication food microbiology Application of organism migoranol L essential oil as an antimicrobial agent in Sausag
11. Darwish, Thani Mustafa (1983). A summary of medical pharmacology, Ministry of Health - Republic of Egypt.
12. Ibrahim IG, El-Salkh B, Shawki N, Abou ElFotouh SM, Abou El-Fotouh HM (2002) Comparative study on the effect of gliclazide and two antidiabetic plants used in folk medicine on albino rat's fetuses.Egyptian Journal of Hospital Medicine, 6, 80-98
13. Iriadam M, Musa D, Gümühan H, Baba F (2006) Effects of two Turkish medicinal plants Artemisia herba-alba and Teucrium polium on blood glucose levels and other biochemical parameters in rabbits. J. of Cell and Molecular Biol. 5, 19-24
14. Jaouadi, I., A.T. Koparal, R.B. Bostancıoğlu, M.T. Yakoubiand M. El Gazzah, (2014). The antiangiogenic activity of Artemisia herba-alba's essential oil and its relation with the harvest period Aust. J. Crop Science ., 8(10):1395-1401
15. Jia W, Gao WY, Xia PG.(2003). Antidiabetic drugs of plant origin used in China: Compositions. Pharmacology and hypoglycemic mechanisms. Zhongguo Zhong Yao Za Zhi; 28: 108-113.
16. Karim, Fawzi M. and Saleh A. Qurran, 1986 . Medicinal plants of Jordan. Jordan Natural History Museum, center for Jordanian studies. Published by Yarmouk University – Irbid- Jordan
17. Khattab , M.E. and Omer , E.A.(1999). Cultivation of medical aromatic plants Egypt J. Itort., 26 (3) : 248-265
18. Majeed, Sami Hashem; Muhannad Jamil Mahmoud,(1988) "Iraqi plants and herbs between folk medicine and scientific research." Scientific Research Council. Life Sciences Research Center, Department of Drugs and Drug Evaluation.
19. Maqboul, M. A., and M. M. Al-Sakit. (1995). Chemical of Medicinal Plants. Arabic Center for Student Services. Amman. Jordan. p. 22-44.
20. Mighri, H. H. Hajlaoui, A. Akrout, H. Najjaa, M. Neffati, (2010). Antimicrobial and antioxidant activities of Artemisia herba-alba essential oil cultivated in Tunisian arid zone. C R Chim., 13(5): 380–386.
21. Oboh, P. A., & Abulu, E. O. (1997). The antimicrobial activities of extracts of Sidium guajava and Citrus aurantifolia. Nigerian journal of Biotechnology, 8(1), 25-29.
22. Omoregie, E.H, O.O. Emmmanuel, U. Grace , A.M. Sabo, I.Ibrahim, , E. Samuel, Kunle, O. Folashade, , J. Ibrahim, , N.Ibekw , E.S.Koma, and J. Ibumeh (2010). Phytochemical Screening and antimicrobial studies of methanol ethyl acetate and hexane extracts of Vitexdoniana, sweet. (stem bark and leaf. Nat Sci., 8(8) 177-185
23. Oreibi, Maryam Abdul Bari. (2017). Study of the chemical composition and active compounds of origanum majorana leaves and their use as a dietary preservative. Journal of Agricultural Sciences, Volume (48), Issue (4): Pages (92-101).
24. Qubaisi, Hassan. (1998). A dictionary of herbs and medicinal plants. Scientific Books House, Beirut, Lebanon.
25. Qutb, Fawzi Taha, (1981). Medicinal plants cultivated and their components. Mars Publishing House. Riyadh - Kingdom of Saudi Arabia.
26. Rhabasa-Lhoret R, Chiasson JL (2004) AlphaGlucosidase Inhibitors. In: International Textbook of Diabetes Mellitus, Defronzo, R.A., E. Ferrannini, H. Keen and P. Zimmet (Eds.). John Wiley, UK.
27. Tastekin D, Atasever M, Adigüzel G, Keles M, Tastekin A (2006) Hypoglycaemic effect of Artemisia herba-alba in experimental hyperglycemic rats. Bull. Vet. Inst. Pulawy. 50, 235-238
28. The writer, Youssef Mansour. (1988). Classification of seed plants. Ministry of Higher Education and Scientific Research, University of Baghdad. P. 511.
29. Twaij HAA, Al-Badr AA (1988) Hypoglycemic activity of Artemisia herba-alba. J. of Ethnopharmacol., 24, 123-126.
30. V. Jaspreet, S. Sivakami, A.C. Suthar, M. Banavalikar, and M.K. Byani, Antihyperglycemic effect of three extracts from Momordica Charantia. J.Ethanopharmacol. (2003); 88:107-111.