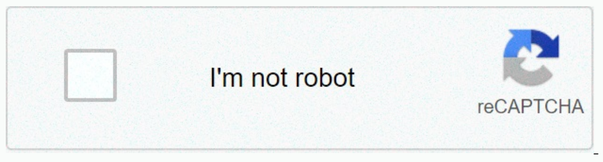

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Lamium album comp

HTML full text in vitro assessment of antioxidant potential, total phenolic and flavonoid content and antibacterial activity of LAMIUM EXTRACTS from the album Hamed Fathi 1, 2, Abbas Gholipour 2, Muhammad Ali Ebrahimzadeh * 3, Esmaeil Yasari 2, Mohammad Ahanyan 4 and Berzad Parzi 5 Pharmaceutical Sciences Research 1, Department of Medical Chemistry, Faculty of Pharmacy 3, Department of Microbiology, Faculty of Medicine 4, Department of Physiology, Faculty of Medicine 5, Center, Mazandaran University of Medical Sciences, Sari, Iran. Department of Biology, Faculty of Sciences 2, University of Tehran, Iran. ABSTRACT: Lamium's album is used as a blood purifier in the treatment of respiratory tract diseases, diarrhea and bleeding. In this study, antioxidants and antibacterial activities of its air parts and roots were studied. The extracts are derived from soxhlet apparatus. Methanol used as a solvent extraction. The content of phenol and flavonoids and antioxidant properties are evaluated by various methods. Different concentrations of extracts have been used to determine MIC. Microorganisms suspensions have been prepared in Mueller Hinton broth with different concentrations of extracts and incubated for 24 hours at 37 °C, cloudiness of the tubes is observed. MIC and MBC. The total phenolic content of aerial extracts and roots are 242,75 ± 10.13 and 135,0 ± 8,15 and the total flavonoid content is 79.83 ± 4.22 and 30.33 ± 1,08 QE. The radical-scavenging DPPH capacity of the extracts is 238.4 and 257.0 µg/ml respectively. The amount of nitric oxide scavenging at 1600 mg/ml is 58 and 68%, respectively. IC50 for chelating activities of extracts are 1139 and 1323 µg/ml respectively for aerial and root extracts. The antimicrobial property of air parts against E. coli in the microdilution method is better than the root extract. Its mean diameter of inhibition is 17 mm. The activity of klebsiella root extract is better. The diameter of its inhibition is 11.66 mm. In conclusion, the anti-microbial and antioxidant activities of L. album air parts is higher than root extract. Antibacterial, Antioxidant, DPPH, Lamium Album, Phenol INTRODUCTION: Medicinal plants as a natural source of medicine have been used since ancient times. Besides some advantages, chemical products have some disadvantages, which the approach uses natural products in the field of medicine, nutrition and industry. Today, extensive studies of medicinal plants are carried out to identify active ingredients, properties and pharmacological activities 1. Herbal treatments include features such as availability and performance. They are also mentioned in cultures, old books, and divine religions 2, 3. The role of free radicals in the pathogenesis of many has been established. Many biochemical reactions in the body produce reactive oxygen molecules that have biological degradation capacity. The harmful effects of free radicals can be blocked by an antioxidant. Scavenging free radicals can lead to detoxification. Foods rich in antioxidants play an essential role in the prevention of cardiovascular disease, cancer, degenerative diseases (Parkinson's and Alzheimer's). Flavonoids are widespread in food, fruits and vegetables, and many of them have an anticancer property. These compounds are present in the extracts of these plants 4. Some plants contain phenolic compounds with antioxidant properties that are closely related. Plants that are rich in antioxidants can protect cells from oxidative stress. Activated phagocytic ingegents to destroy invading bacteria and fungi should use these compounds. Superoxide has a useful role in regulating cell growth and intercellular messages. Plants with antioxidant properties can also have anti-inflammatory, anti-depressant, and so effects 5. In recent years, much research has been done to find effective compounds against bacterial fungal and parasitic infections 6. Control of microorganisms in the environment and in the preparation of various materials intended for human consumption is important. Klebsiella pneumonia has a polysaccharide capsule, which plays an important role against the protection of the host. Escherichia coli optional, non-spporforming bacteria fermenting glucose and producing gas 7, can destroy many microorganisms and inhibit the growth of many other organisms. Medicinal products of plant origin have antimicrobial properties with fewer side effects than synthetic products. Also they have other healing properties too 8. Recently plant products such as, extracts and essential oils extracted have been studied for their antimicrobial properties 9. It is clear that some of them act against parasites, fungi, viruses and bacteria 10. The album Lamium (in the Persian white nettle) is from the Lamiaceae family. North (Gilan and Mazandran provinces) and northwest of Iran is the natural habitat of this plant Fig. 1. Fig. 1: LAMIUM ALBUM This plant grows in moist, shady areas of the forest edge in Europe, Asia and North Africa. Seven species of this genus grow in Iran. The most important active ingredients of these plants are taminas, saponins, volatility, volatile oil, potassium, flavonoids, glycoside isquercitin, tyramine, histamine and choline. It is somewhat similar to ordinary nettle (Urticadioica), but it is actually different. Some of the types of Lamius, around the world, are traditionally used to treat injuries, fractures, infections, high blood pressure; also as a blood purifier, healer, diuretic, narcotics 12, 13. L. album has been in raw or boiled or tea for a long time, especially in the Mediterranean region. The evidence shows that its anti-inflammatory and antioxidant properties 14, 14, From the compounds of the air organs such as colin, campol and campol-3-glucoside are found and leaves are edible, which are a rich source of carotene. In India, its flowers used to stop bleeding, help sleep, as a blood purifier and to treat bleeding hemorrhoids. In Spain, its root is used in wound healing and its flower to eliminate severe diarrhea. Studies on the extract of L. album air parts to assess its pharmacological properties are made and showed the following properties in a different state: purifies blood, lowers blood sugar, treats anemia and mild diarrhea, stomachulcers, kidney stones, rheumatism, varicose veins, rests, insomnia, dandruff, depression, regulates menstruation, causes hair growth, reduce joint pain and detoxify the body 5. Other effects are in the prevention of menstrual disorders, abdominal inflammation, musculoskeletal diseases 15 antioxidant properties 16. Its leaves have an antibacterial property of 17. This study aims to assess antioxidant activity, total phenolic and flavonoid content and assess the antimicrobial properties of different organs. MATERIALS AND METHODS: Plant extracts: Lamia album L. samples were collected in the spring from the natural habitats of the town of Sari (Gale Kola Sofla Kordkheyl forest villages). The herbarium of each sample is prepared and stored at Payamnoor University's Sari Branch Herbarium Center (voucher specimen 35-93). Flowering air parts and roots of plants are dried in the shade. The samples were on the ground. Extract 30 g of powder from a Soxhlet apparatus using methanol as solvent for 8 hours. Evaporate the solvent in a vacuum and then dry using a lyophilising dryer 18. Flavonoids Measurement: Total flavonoids were calculated using the method of our recently published paper 19. For short, mix 0,5 ml of extract solution in methanol separately with 1,5 ml of methanol, 0,1 ml of 10 % aluminium chloride, 0,1 ml 1 M potassium acetate and 2,8 ml of distilled water and leave at room temperature for 30 minutes. Measure the absorption of the reaction mixture at 415 nm with a double spectrophotometer (Perkin Elmer). The total content of flavonoids is calculated as vertcetin from a calibration curve. The content is expressed as ivercetin equivalent (QE). Total phenolic content: Total phenolic compounds content are determined by the Folin-Ciocalteau method according to the recently published method 19. Mix the extract samples (0,5 ml) with 2,5 ml of 0,2 N reagent folin-Ciocalteau for 5 minutes and 2,0 ml of sodium carbonate 75 g/l. Absorption of the reaction is measured at 760 nm after 2 hours of incubation at room temperature. The results are expressed as equivalents of Gaelic acid. The experiment was repeated three times and an average was reported. Determination of reducing power: Fe (III) is often used as an indicator of the activity of electron electrons is an important mechanism of phenolic antioxidant action. The decreasing power of the extract fe3+ is determined according to the recently published document 20. Mix different amounts of extracts (50-1600 µg ml-1) in water with a phosphate buffer (2,5 ml, 0,2 M, pH 6.6) and potassium ferricyanide [K3Fe (CN)6] (2.5 ml, 1%). add to the mixture to stop the reaction, which is then centrifuged at 3000 rpm for 10 minutes. Mix the top layer of the solution (2,5 ml) with distilled water (2,5 ml) and FeCl3 (0,5 ml, 0,1 %), and measure the absorption at 700 nm against an appropriate blank solution. Increased absorption of the reaction mixture indicates increased reducing force. Vitamin C is used as a positive control. DPPH Radical Scavenging Activity: Stable 1,1-diphenyl-2-picryl hydrazyl radical (DPPH) is used to determine free radical scavenging activity of extracts 20. In the same volume, different concentrations of extracts are added to dpph methanol solution (100 µM). After 15 minutes at room temperature, the absorption is recorded at 517 nm. The experiment is repeated three times. Vitamin C and BHA were used as standard controls. IC50 values mean the concentration of the sample required to clear 50 % of dpph free radicals. Iron II chelate efficiency: The ability of extracts to chelate iron ions is evaluated by the recently published edition 21. Add the extracts (0,2-3,2 mg/ml) for a short time to a solution of 2 mM FeCl2 (0,05 ml). The reaction is initiated by the addition of 5 mM ferrozine (0.2 ml), the mixture is shaken vigorously and left stands at room temperature for 10 minutes. Then measure the absorption of the solution spectrophotometrically at 562 nm. The inhibition rate of ferrozine-Fe2+ complex formation is calculated as [(A0-As)/As] × 100, where A0 is the absorption of control, and as is the absorption of the extract / standard. Na2 EDTA was used as a positive control. Nitric oxide radicals scavenging efficiency: The ability extracts to scavenge nitric oxide have been evaluated according to recently published paper 21. For the experiment, sodium nithropruside (10 mM), in phosphate buffered saline, is mixed with different concentrations of extracts dissolved in water and incubated at room temperature for 150 min. After the incubation period, add 0.5 ml of griess reagent. The absorption of the formed chromophore is reported at 546 nm. Ivercetin was used as positive control 21. Antimicrobial effects: Concentrations of 25, 37.5, 50, 75, 100 and 150 mg/ml in 10% DMSO (dimethyl sulfoxide (aminsan/Iran) is prepared and used to determine MIC (minimum inhibitory concentration) and disc diffusion. (ACTS 7881) and Esserichia coli (25922 ATCC), provided by the collection from tehran University culture. 4-5 colonies of young culture is inoculated to sterile Mueller-Hinton broth (Fluka). Cloudiness of microbial suspensions prepared in accordance with 0.5 McFarland standard (cloudiness 1.5 to 108 × ml) has been studied. The samples are diluted. The antimicrobial activity of the extracts has been studied by the methods of Agar Klaip and Microdidration. In the Agar method, the suspension with a concentration of 1,5×106 cfu/ml is cultivated on the middle in three directions, after which different concentrations of extracts are well added to the cham. Negative and positive control are the solution used to solve the extract (10% DMSO) and gentamicin (Caspian tamin), respectively. The plates were incubated for 24 hours at room temperature and after the formation of microbial growth, the inhibition zone is measured in millimetres 22. The dilution method determines the minimum inhibitory concentration and the minimum bactericidal concentration of methanol extracts. Eight sterile tubes are selected and 0.5 ml of sterile Mueller Hinton broth added to the tubes, then 10 mg of bacterial suspension is added to 10 µg different concentrations of extracts (25, 37.5, 75, 100 and 150 mg / ml). Saline instead of extract is added to the other tube. Positive control is considered bacteria without extract and negative control bacteria with extract. The last tube without cloudiness (without growth) is considered MIC. All tubes without cloudiness shall be cultivated on the plate incubated at 37 and 24 hours for the determination of MBC (minimum bactericidal consen-tarat). The non-growth plate corresponding to the lowest concentration of the tube shall be considered as MRG. The colony concentration at 99,9 % is determined. The test is repeated 3 times. The resulting data were analyzed by ANOVA, dispersion analysis and chi-squared. The significance of the difference is determined at the level of p<0.001 23. RESULTS: Extracts Yields: The yield of air parts and root are 19 and 11%, respectively. Obtained data on antioxidant property: Evaluation of phenolic content: To assess the total phenolic content of extracts, Folin-Cyoculto is used. The calibration curve was drawn according to the Gaelic acid standard and the resulting equation is calculated as follows: y = 0.005x + 0.026 (correlation coefficient 0.997). The total phenolic content of the parts and roots of the air parts are 242,75 ± 10.13 and 135.0 ± 8.15 GE mg/g of the extract. Determination of Flavonoids Contents: The total content of flavonoids of extracts is measured by colorimetric method. Ivercetin is used as a standard. After drawing the standard curve, the equation line is obtained as follows y= 0,006x (correlation coefficient 0,998)Total 79.83 ± 4.22 and 30.33 ± 1.08. Yielding the speed of DPPH radical: IC50 for standards and extracts have been obtained. For BHA it is 53,9 µg/ml and for ascorbic acid 5,05 µg/ml; for air parts and root extracts 238.4 and 257.0 µg/ml, respectively. The effectiveness of radical scavenging in all extracts increases with an increase in concentrations. Efficiency reduction: Extracts in concentrations of 25 to 800 µg /ml have poor reducing force. Slight differences were observed among the extracts reducing power (p>0.05), but this difference was statistically significant compared to vitamin C (p<0.01) Fig. 13. 2: THE DECREASING EFFICIENCY OF AIR AND UNDERGROUND ORGAN EXTRACTS IN LAMIUM ALBUM VITAMIN C IS USED AS POSITIVE CONTROL The rate of effectiveness of nitric oxide: IC50 for IC50 for L. album extract air parts with the highest concentration, 1600 mg/ ml, is 58%. Root extract in the same concentration showed 68% inhibition. IC50 for ivercetin (used as a positive control) was 37.9 mg/ml. Extracts acted much less than ivercetin (p<0.01). Iron chelating property: IC50 values for aero and root extracts are 1,13 and 1,32 g/ml respectively. 17.5 µg/ml. IC50 for EDTA chelation efficiency is 17.5 µg/ml. Antimicrobial based on findings: Antimicrobial MIC for methanol extract of L. album parts of E. coli is 100 mg/ml and MBC value is 150 mg/ml Table 1. The method of micro dilution confirmed the method of well. Antimicrobial activity of air part extract is better than that of root extracts Fig. 3. MIC's L. album of air parts extract at a concentration of 150 mg/ml of Klebsiella is better than root extract. Similar data were found in the well method. MIC of Klebsiella air parts is 150 mg/ml and MRT is observed at a higher concentration in Table 1. TABLE 1: MEAN OF ZONE OF INHIBITION IN THE STANDARD SPECIES UNDER STUDY AGAINST DIFFERENT CONCENTRATIONS OF THE LAMIUM ALBUM AERIAL ORGAN EXTRACT Concentration of every extract of Lamium album (mg/ml) The standard species 150 100 75 50 37.5 25 P-value E. coli 16.33 ± 2.08 17 ± 2.645 15 ± 2.64 11.66 ± 1.52 9.33 ± 1.52 8.33 ± 0.57 0.022 klebsiella 10.66 ± 0.96 10.33 ± 0.89 7.33 ± 1.06 3.6 ± 1.25 1.3 ± 0.99 0 ± 0.98 0.0095 FIG. 3: ZONE OF INHIBITION OF THE AERIAL AND UNDERGROUND ORGANS EXTRACTS OF THE LAMIUM ALBUM ON E. COLI FIG. 4: ZONE OF INHIBITION OF THE AERIAL AND UNDERGROUND ORGANS EXTRACTS OF THE LAMIUM ALBUMON KLEBSIELAE MIC at the concentration of 75 mg/ml was better on Klebsiella and similar result was observed in well method. MRL was observed in 100 mg/ml Table 2. Antimicrobial activity of root extract is better than air parts extract. Overall, the assessment of the activity between the air and root extracts of the L. klebsiella album indicates that the result of the micro-dilution method is well confirmed by method. Air part extract at a concentration of 150 mg/ml and root extract at a concentration of 75 mg/ml are better. In general, the antimicrobial effect of root extract is better than the extract of air parts. The results of the effect of methanol extract from album L. in the disc diffusion method on different types of microbes are given in Figure 4. The effect of different concentrations of aero and root extracts on L. album on growth inhibition diameter of Klebsiella and E. coli reveals a significant difference (p≤0.05). Based on statistical analysis by ANOVA, inhibition of zone growth at high concentrations is more than low concentrations. Extracts have a better antimicrobial effect on E. coli, which may be due to the presence of two cell membranes per gram of negative bacteria. The results of the effect of the root extract on E. coli by a microdilysion method indicate that the concentration of 100 mg/ml will work better. A similar result was obtained with the well method. MIC root extract of E. coli is 100 mg/ ml and MRC value is 150 mg/ ml Table 2. TABLE 2: MEAN INHIBITION ZONE IN STANDARD TYPES IN A STUDY AGAINST DIFFERENT CONCENTRATIONS OF LAMIUM UNDERGROUND EXTRACT ALBUM CONCENTRATION OF EACH LAMIUM EXTRACT (mg/ml) Standard species 150 100 75 50 37,5 25 P-value E. coli 14.33 ± 1.15 16.33 ± 0.57 10 ± 2.64 7 ± 1.0 6.0 33 ± 2.64 2.51 5 ± 1 0.022 klebsiella 10 ± 0.89 6 ±0.53 11.66 ±1.1 ±1.1 25 3.33 ±1.32 3 ±1.55 0.66 ±0.99 0.0095 DISCUSSION: In this project we examined antioxidant and antibacterial activity L. the album. The antibacterial property of compositae and Lamiaceae plants essential oils have been studied against nine strains of gram-negative bacteria and 6 strains of gram-positive bacteria 24. Cetin, etc., (2006) examined the cytotoxic activity of Labiatae extracts (Lamiaceae) on larvae. The eliamic extract of 5 species of the Labiatae family is obtained from Turkey to assess cytotoxic activity against mosquito larvae Culex pipiens 25. Erdemoglu et al., (2006) examined the air organ antioxidant effect of 4 plants of the Lamiaceae family using DPPH, as well as FIA-CL. All extracts showed a significant effect against dpph free radicals and inhibitory effect on H2O2 or HOCL luminolchemiluminescence. These extracts inactivated 50% of DPPH radicals in the following descending order: Stahis vesantina, Salvia viridis, Salvi amulticaulis, Eremostachysl aciniata. The strongest extract of H2O2-induction that belonged to Salvia viridis and HOCl induction belongs to Stachys Byzantine extract. Results show that these natural extracts are a potential antioxidant 26. 2008 examined the growth of cytotoxic effect of free radicals on the album of L. Methanol extracts are mainly rich in flavonoids and phenolic acids and the toxic effect of ethyl acetate extract against normal plastic fibroblasts (HSF). The resulting data indicate that the extract under study has potential benefits in the preparation of natural forms 27. Zolfagari et al., (2012) in their study in Arrasbaran (Iran) of medicinal plants, evaluated the pharmacological properties of L. album flowering branches, and found anti-inflammatory and diuretic effects, is a healer useful in the treatment of diseases of the respiratory tract and spleen. In flowers, fruits and other plant tissues, effective chemical compositions such as chamberss, mocillage, sugar, glycoside and saponins have been reported 13. Nemati et al., (2012) in Kermanshah Province (Iran) in their research on medicinal plants, found that the aviation parts and roots of L. album L. had healing properties 28. Bubueanu et al., (2013) reported significant antioxidant properties in butaneol extract from lamium album and L. purpurium from DPPH and hemium stage methods 29. Total phenolic and flavonoid content: The mechanism of action of flavonoids as an antioxidant is by collecting free radicals such as superoxide anion and lipid peroxide and free hydroxy radicals, in addition to the effectiveness to disrupt one oxygen and chelation of metals, as well. The antioxidant property of this class of materials refers to the presence of aromatic groups and hydroxyl free radicals. Flavonoids with free hydroxyl radicals do better scavenging radicals 30. Aerobic organ extract has more phenolic and flavonoid content than root extract. The total phenolic content of aero and root extract from the album of L. is more than Diospyroslotus, Sambucus ebulus, Ferula assafoetida, Grammosia diumplaticarum, Fahoa sedoiavidana, Pterocaria fraxinifolia and wild pear (Pyrus boissieriana) and root extract has less total phenolic content than Melilotus arvensis, Artemisia absinthium L, paratricia perition Mey and Salvia gy glutiosis. The content of flavonoids in aero and root of the album of L. is higher than Alcea hyrcana Grossh, Hyosciamus squarrosus, Colchicum speciosum Steven, Zea mays, P. fraxinifolia, P. boissieriana and A. absinthium L. also total content of flavonoids in L. album root is lower than S. glutinosa and M. arvensis 20, 30, 31 as well as in plants such as Achillealhemsii 18818, as well as in plants such as Achillealhemsii 188188888888 , as well as in plants such as Achillealhemsii 188, as well as in plants such as Achillealhemsii 188, as well as in plants such as Achillealhemsii 18, as well as in plants such as Achillealhemsii 188, 18, 18, 18, 18, as Achillea wiylhemsii 1888888. , plant L. album and Hypericum perforatum L. 32 by DPPH, nitric oxide scavenging, iron chelating activity is weaker, and the decreasing is significant and phenol is better than the yarrow plant were weaker than H. perforatum L. The plant album is better than H. perforatum L. The effectiveness of scavenging DPPH radical: DPPH radicals is a stable free radical with central nitrogen nitrogen When reduced, it turns into a stable DPPH-H molecule and turns from purple to yellow color. DPPH radical absorption is at 517 nm, but as soon as reduced by antioxidant, absorption is reduced. The antioxidant activity of the samples is expressed by the disappearance of purple color 20. To estimate dpph's scavenging rate, DPPH color is used as an indicator. On this basis, greater efficiency in scavenging radicals, more intensity of the purple drop to yellow color. IC50 for standards and extracts are obtained, as follows: IC50 for BHA 53.9 µg/ml, ascorbic acid 5.05 per µg/ml, for L. albums air parts extract 238.4 µg/ml and root extract 257.0 µg/ml. Radical cleansing activity in all extracts is increased by increasing the concentration of the extract, but the air organ is more active. By comparing IC50 of this plant with certain species of this plant in northern Iran, the anti-oxidative action of this plant can be reviewed. Methanol extract from D. lotus and Pyrus boissieriana shows the value of IC50 of 1450 and 3000, respectively. The extract of methanol leaves from Eryngium caucasum and fruits of Crataegus elbursensis extract have IC50 values of 270 and 341.29 respectively. Reducing power: Reducing power, shows the effectiveness of donating electrons to antioxidants. If a substance possessing this property can reduce the amount of oxidized subtotal made during lipid peroxidation. Therefore, the chain of reaction will break and act as primary and secondary antioxidants 20. The measurement of the reducing power of the sample is carried out by reducing iron III (iron ions) to iron II (iron ion). Due to a decrease in a specific blue color named Prussian blue can develop at a wavelength of 700 nm. The rate of iron complex can be determined by measuring the formation of Prussian blue. An increase in absorption at this wavelength is indicative of absorption abilities. In this study, it was found that, the reduction strength of both extracts increased with an increase in concentrations, but these extracts as compared to ascorbic acid showed a lower degree of reduction. Nitric oxide scavenging rate: Nitric oxide is free radicals with one electron, produced by L-arginine. Nitric oxide scavenging is in competition with oxygen, causing a decrease in nitrite ion. Therefore, the more moving, the less nitrate production and less absorption, therefore the less color can develop 32. IC50 levels for standard ivercetin are obtained 37.9 mg / ml. For extract of aeroorgan organs of L. album, which is tested at the highest concentration is 1600 mg / ml, with 58% inhibition and the root extract at the same concentration is 68% inhibition. The extracts are much weaker than ivercetin. Metal chelating efficiency: Most foods in contact with metal ions undergo oxidative reactions. These metals are present in the or to eat during processing. Bilivalent intermediate metals, iron, the most common transfer electrons, through the fenton reaction, produces a large amount of hydroxyl radicals. Thus, the harmful effects of hydro peroxide are increased. The amount of hydroxyl radical, which is the most important free radicals in biological tissues can be determined. EDTA, ascorbic acid, citric acid and phenolic compounds by chelating metals, such as iron preventing the production of hydroxyl radicals. Prevention of harmful reactions such as Fenton is important for human health and shelf life of food, cosmetic and pharmaceutical products 18. In this study, the Frozin detector was used, which makes a red complex with iron II. The concentration of iron in the presence of chelating agents decreases, and the red color of the iron-Frrozin complex decreases. In this test, the EDTA was selected for control. Both extracts show a weak chelating effect. The fruit extract of methanol from D. lotus and Pyrus boissieriana, has acceptable values of IC50 and with a stronger effect than the album L. Ultimately the entire antioxidant activity of the aerobic organ of L. album is better than root extract in all tests performed, but root extract is stronger in scavenging nitric oxide. The extract of air parts had higher activity may be due to a higher content of phenol and flavonoid. Antimicrobial activity: In this study, using the agar diffusion sensitivity study showed significant antimicrobial activity of plant extracts against microorganisms. The data obtained are consistent with the results of MIC testing. The MIC range of the extract relative to the two standard types is 100 to more than 150 mg/ml and 75 to more than 37.5, 25 and 50 mg/ml respectively. Album extract in the highest concentration shows antimicrobial activity against Gram-negative bacteria. In this regard, this study aims to evaluate the antimicrobial activity of alcoholic extracts of air and root extract from L. album vs. E. coli and Klebsiella species. On top of that, air parts extract has had higher inhibitory effects than root extract against test standards microbes. Like aero and root extracts, they have the most concentration-dependent inhibitory effect against E. coli and Klebsiella. The two extracts under investigation in concentrations of 25 mg/ml and 100 mg/ml have the lowest and highest antimicrobial activity, respectively. Different concentrations of the root and air organ of L. album extracts, in general, high concentrations (150 mg / ml) to low concentration (25 mg / ml) we observed an orderly decrease in the diameter of inhibition of the zone, arranged. Today, many studies have been carried out on antimicrobial activity of the hydro extract and organic substances of the medicinal plants of E. coli and Klebsiella. Klebsiella. et al., in their study, found E. coli sensitive to methanol extract from European oak leaves with a concentration of 300 µg/ml 33. In their study on antimicrobial activity of the aqueous extract of the album by L. Chipeva and colleagues (2013) in their study on the antimicrobial activity of l. album aqueous extract, they found that leaf extract has a higher antimicrobial activity than flower extract and an antimicrobial may be used 17. Davoodi et al., (2017) studied for the antibacterial activity of Mespilus Germanica leaf extract, the results showed the best inhibitory and bactericidal activities against Klebsiella pneumonia (MIC= 3.333 ± 0.0233 and MBC = 5.833 ± 0.065). The lowest MIC was observed against Vibrio cholera (6, 667 ± 0.048), and the lowest MRH was observed against E. coli and Shigella dysentiea (9.167 ± 0.042) 34. Although the study had an antibacterial effect on a hydroalcohol extract of Astragalus hamosus made of E. coli, and an inhibition zone at a well-method in concentrations of 50, 100, 200 and 400 mg/ml was 10, 12, 16 and 18 mm, respectively 35. CONCLUSION: In this study, although it was made at a high concentration of 150 mg/ml of Gram-negative bacteria, but the mean concentrations were 75, 100, 150 and 50 mg/ml and an inhibition zone were 16.33, 17, 15 and 11.66 mm respectively. Tannans have different properties, including antimicrobial effects. Although extracts of this plant has a total phenolic and flavonoid content. In our study we found antibacterial properties of methanol extract from air and root organs extract from L. album of klebsiella and the air organ has a more antibacterial property. Total phenolic content and antioxidant effects have been reported in an L. album plant that is relatively higher in the aeroorgan and also flavonoid content has been present more in the aerobic organ. In the higher concentration, the effect is more. Alkaloids that have antimicrobial activity are identified in the album of L. Alkaloid content are more reported in the Lamiaceae family. Alkaloids are present in all organs of the plant. Other important compounds such as tamis, muccilage, volatile oil, potassium and flavonoids, glycosides and histamine has long been in folk medicine as a medicinal species. In this study, the antimicrobial properties of air organ extract was more of E. coli, but the extract had a greater effect on Klebsielae. In general, air organ extract has a higher antimicrobial activity by micro dilution and methods. RECOGNITION: We appreciate Mazandaran University of Medical Sciences and Sari Payame Noor University for financial fund and also approval of this research, as well as for cooperation in implementation and consultation Pharmaceutical Sciences Research Center, Sari School of Pharmacy and Medicine. Sari. INTERESTS: The authors declare that they have no conflict of interest. REFERENCE DOCUMENTS: Mahmoodi M, Ebrahimzadeh MA, Abdi M, Arimi Y and Fathi H: Antidepressant Activities of Feijoa sellowiana European Medical and Pharmacological Sciences Review 2015; 19(13): 2510-2513. Naderi M, Dehpour AA, Ya gubbyBecklar S, Fathi H and Ataí R: Effects of antidiabetic and anti-neuropathy effects of Nosma dihroantum in an experimental model of diabetes from streptozocin in mice. Iranian Journal of Endocrinology and Metabolism 2017; 19(3): 161-169. 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Ebrahimzadeh*, E. Yasari, M. Ahanjan and B. Parsi Authors Science Center of Sciences, Faculty of Pharmacy, Mazandaran University of Medical Sciences, 18 km Farah Abad Blvd, Sari, Iran. Email: zadeh20@yahoo.com Received: August 22, 2017 Revised: August 10, 2018 Accepted: August 31, 2018 DOI: 10.13040/IJPSR.0975-8232.9(10.4210-19 Published: October 1, 2018 Download Download Download

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