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تأثير المواد كالزيوت الطيارة المستخرجة من النباتات المائية في مكافحة الأمراض المختلفة

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The effect of substances as Volatile oils extracted from Aquatic plants in fighting various diseases

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الملخص:

تم استخدام المستخلصات النباتية لأغراض علاجية منذ آلاف السنين، ومن خلال التجربة والخطأ، اكتشف السكان الأوائل أن بعض المستخلصات النباتية لها تأثير علاجي، حيث أدرك العلماء تدريجياً في أوائل القرن العشرين كيفية الحصول على المواد الفعالة في شكل نقي لاستخدامها في الأدوية.

أشارت التقارير الأخيرة إلى أن استخدام المضادات الحيوية كمحفزات للنمو في مياه وأعلاف الدواجن أصبح موجوداً في الاتحاد الأوروبي، كما أصبح منتجو الدواجن مهددين بتغذية الدواجن في الولايات المتحدة الأمريكية. (سلطان وزملاؤه، 2008) ونظراً لبقاء بعض متبقيات هذه المضادات الحيوية في الأنسجة المحللة للطيور وأضرارها على صحة الإنسان فإن تناول هذه اللحوم والأعشاب والمستخلصات النباتية تم استخدامها في تغذية الدواجن كمواد آمنة وطبيعية.

لذا يمكن بيان دراسة الحالة في السؤال التالي:

ما هو تأثير المواد المستخلصة من بعض النباتات في مكافحة الأمراض المختلفة؟

الكلمات الدالة: التأثير، الزيوت الطيارة، النباتات المائية، الأمراض المختلفة، المضادات الحيوية.

Abstract

Plant extracts have been used for therapeutic purposes for thousands of years. Through experimentation and error, early human populations discovered that some plant extracts had a therapeutic effect, as scientists gradually realized in the early 20th century how to obtain active substances in pure form for use in medicines.

Recent reports have indicated that the use of antibiotics as growth catalysts in poultry water and feed has become present in the European Union and poultry producers have been threatened with poultry feeding in the United States of America. (Soltan and colleagues, 2008) due to the survival of some residues of these antibiotics in bird-resolving tissues and damage to human health consuming these meats, herbs and plant extracts have been used to feed poultry as safe and natural materials.

So, The case study can be stated in the following question:

What is The effect of substances extracted from some plants in fighting various diseases?

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Study Obejectives

Keywords: Effect, volatile oils, aquatic plants, various diseases, antibiotics.

INTRODUCTION

Nature is the primary source of many drugs and has supplied us with many of the drugs we use today. Three well-known examples originating from nature are penicillin, aspirin and morphine. Aspirin was separated from Willow trees after the tree trunk was used as a treatment for toothache. Morphine, a commonly used painkiller, has been separated from poppy trees. Beniselin has been discovered from bread mold.

Plant extracts have been used for therapeutic purposes for thousands of years. Through experimentation and error, early human populations discovered that some plant extracts had a therapeutic effect, as scientists gradually realized in the early 20th century how to obtain active substances in pure form for use in medicines.

Humans have been able to extract many medicinal plnts used to treat and nourish them through the purification of their effective ingredients of leaves, stems, roots, seeds and oils. (Al-Haisha, 2005), where the idea of using these parts of medicinal plants to feed poultry as growth promoters was conveyed is reflected in their productive performance by acting as flavorings when added to bird water and feed, Recent reports have indicated that the use of antibiotics as growth catalysts in poultry water and feed has become present in the European Union and poultry producers have been threatened with poultry feeding in the United States of America. (Soltan and colleagues, 2008) due to the survival of some residues of these antibiotics in bird-resolving tissues and damage to human health consuming these meats, herbs and plant extracts have been used to feed poultry as safe and natural materials[1].

So, The case study can be stated in the following question:

What is The effect of substances extracted from some plants in fighting various diseases?

Study Obejectives

This Study aims at the following:

1. To Clarify Aquatic plants and treatment of human diseases
2. To Indicate Relationship between human health and chemical defences in the marine environment
3. To Know therapeutic properties caused by marine plants
4. To Debate The effect of water and alcoholic extract of the leaves of the Sidr plant Zizyphusspin-csiti on the growth of some bacterial species
5. To Know Extraction of pharmaceutical oils from plants
6. To Recognize Mechanisms for extracting volatile oils from plants

[1] Lirar Abd El Sahab AL Shamri, The effect of adding different concentrations of Pimpinella anisum L. anisum seed powder to drinking water in some meat chicken production indicators, Journal of Babylon University/Pure and Applied Se ciences/No. (1)/Vol. (19): 2011, P. 201

The importance of research

Research is of great importance in illustrating the role of plants as a cure for many diseases. Besides making perfumes, soap and cosmetics. They are also used as repellents and some are used as insecticides. It is added to the pharmaceutical industry to give it an acceptable taste and smell, especially in children's medicines.

First Section

Aquatic plants and treatment of human diseases

Although at the beginning of this century many drugs were developed as a result of trial and error, the process of discovering drugs from nature now takes place on a regular basis. The process of obtaining samples for extraction is very difficult, through which a large number of organisms are assembled, classified and prepared for examination. Since there is no prior knowledge of the chemical composition of these organisms, it is important to assemble as many different parts as possible. Once assembled, an extract from these organisms is prepared. This process is similar to preparing a cup of tea with a difference that in the drug discovery process an organic solvent is used instead of boiling water in the case of tea. These extracts are then examined and evaluated by bioassay. The ability of this extract to influence certain diseases, such as the ability to kill cancer cells such as leukemia, can be identified through the assessment process[1].

In cases where these extracts show positive results, the active components in the extract can be purified and their chemical composition recognized. If the extracted and purified materials have new chemical structures, they can then be tested on experimental animals, for example using in Vivo mice, the effectiveness here assesses and monitors any side effects. When successful trials in mice are completed, these chemicals are authorized by the International Food and Drug Authority to be tested in humans. If it is confirmed that these substances are effective in humans and no toxic side effects are recorded, this compound is authorized to be used as a new drug[2].

This process may take a long time and exorbitant amount. A new cancer drug takes ten to twenty years to develop commercially with an average cost of $40 million. The opportunity for a new drug to be available on pharmacy shelves is 1:250000.

First: Pharmaceutical drugs derived from marine plants

However, scientific discoveries over the past 25 years suggest that the oceans and seas may be a source of drugs in the coming decades. Efforts to detect drugs have shown that marine invertebrates, especially soft coral reefs and sponges, may be a significant source of many anticancer drugs, viruses and inflammation than any group of terrestrial organisms.

To understand why these marine organisms, such as sponges and coral reefs, produce chemicals that are used to combat human diseases, we must understand their chemical environment where they exist. Both marine and terrestrial organisms produce a type of natural chemical. This type of chemical warfare has been developed during thousands of years in many organisms such as marine invertebrates (sponges, coral reefs, skin spinners) and has

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[1] D. Osama Malika Wahba, Coral Reef Source for Medicinal Drugs, Cairo, Marine Biology Research Center, Ministry of Agriculture and Fisheries, 2020, p. 3

[2] Aneiros, A. and Garateix, A.(2004) Bioactive peptides from marine sources: pharmacological properties and isolation procedures. *J Chromatogr B Analyt Technol Biomed Life Sci.* 803: 41-53.

produced highly toxic chemicals, which are natural substances produced to protect them from enemies in their environment[1].

Sponges and many invertebrates always have attractive colours and represent a large portion of reef animals, many fish and invertebrates feeding on these organisms. However, many of these invertebrates are not approached or fed by other animals despite their lack of protection. Soft coral reefs must protect themselves through chemical defence by producing toxic substances.

Moreover, many marine invertebrates such as coral reefs and sponges feed by filtering large amounts of seawater. Since seawater contains large concentrations of bacteria, these invertebrates concentrate large amounts of toxic microorganisms in their tissues, so these invertebrates that do the filtration process, They must produce antibiotics. In addition, there is intense competition for a place to live and grow. Marine invertebrates grow and produce thin tissues. An organism that produces toxic substances is the costume that eventually wins. This gives us a picture of examples of chemical warfare between a large number of marine invertebrates[2].

Second: Relationship between human health and chemical defences in the marine environment

Many marine organisms produce natural materials as a defensive tool in an extremely complex marine environment. The relationship between drugs that can benefit humans and the environment in which these organisms exist. The production of antibacteria by water-filtering organisms, such as sponges, is not clear. Despite this, why sponges should produce anticancers and why corals should produce compounds useful for treating arthritis.

In a scenario of two species of reef, one grows next to the other, and the one that produces chemicals is effective in killing the multiplying cells of the neighbouring people. The hallmark of cancer cell chemotherapy is the susceptibility of these substances to killing cancer cells that have the potential to divide very quickly. Anticancer drugs have the potential to quickly kill replicated cells (cancer cells) and leave normal cells without harming them[3].

These ideas depict the chemical warfare of marine organisms and the application of this theory to natural compounds in medicine in limited cases. The discovery of new drugs depends on the examination of a large number of extracts of organisms, hoping that if a large number of these extracts are examined, one of them may produce good results.

Scientists have used the information provided by indigenous peoples in many parts of the world to identify many types of new chemicals. A clear example of this is a type of natural compound produced by Palythoa toxica that is a soft reef found in Hawaii... Aboriginal people know that this coral produces toxic substances as they implant their spears with it before battles. Reports have suggested this toxin has separated a group of highly complex compounds called Playtoxin[4]

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[1] Bolis, L., J. Zadunaisky and R. Gilles. Toxins, drugs, and pollutants in marine animals. Ber- lin: Springer-Verlag, xiii+193 pp. [Toxins of Lophogorgia chilen- sis, Muricea californica.

[2] [2] DUH, CHANG-YIH, REI-SHEN HOU CHIA-HAN LIU and KERYEA SOONG.--1995. Potential anticancer cembranolide diterpenes from a formosan soft coral Sinularia flexibilis. Acta Oceanographica Taiwanica 34 (3):71-78.

[3] Osama Malika Wahba, Coral Reef Source of Prescription Drugs, op. cit., p. 4

[4] Livett, B.G., Gayler, K.R., Khalil, Z. (2004) Drugs from the sea: *C*onopeptides as potential therapeutics. *Curr Med Chem*. 11: 1715-1723

Third: Some therapeutic properties caused by marine plants

1-Ecteinascidins

Actinacia is an anti-cancer drug that has been separated from marine indecency living in mangroves in Florida and elsewhere in the Caribbean Sea. This drug is now being tried on humans to treat breast and ovarian cancer. It is one of the most promising drugs for cancer treatment at present.

2-Bryostatin

Priostatin is a natural compound produced by animals called Bryozoa (seated invertebrates that filter water) and outstripped by chemotherapy. This marine drug kills cancer cells without killing normal healthy cells while all forms of chemotherapy inhibit red blood cell production and this requires blood transfusions, on the contrary, priostatin stimulates the production of these cells. These unique characteristics of this compound and many human experiments confirm that this drug will be a new weapon in the human arsenal against cancer.

3.Pseudopterosins

Pseudopterosins are a family of natural compounds produced by sea whips found in Florida and the Bahamas. These chemical compounds have a superior ability to reduce swelling and dermatitis and speed up wound healing. It has been used by a beauty company as a primary compound responsible for reducing human skin freckles, as well as in experiments with psoriasis and arthritis.

Over the past 20 years, scientists have discovered many natural pharmaceutical compounds from marine organisms and an increasing number of marine-origin compounds are in their final stages of development, particularly in the area of anti-cancer drugs, viruses and infections[1].

The likelihood of success in obtaining a new chemical compound is equivalent to five hundred times the quality of the sea in terrestrial sources. The important question here about the sources of marine drugs is the problem of their supply and how to obtain them in large quantities. The quantities of active substances discovered from marine sources are found in very small quantities in nature and therefore it is not feasible to obtain and extract a source of nature for living organisms. So many universities and research centers have done a lot of scientific research to develop techniques to acquire these effective materials in appropriate quantities of marine sources.

There are a lot of biological and biochemical ways to solve this problem. The basic idea of this is to induce the environment around the organism to produce these active substances... For example, aquaculture is one of the methods used in the production of marine foods such as fish, shells and shellfish. Sponge, coral reefs and other marine plants and organisms can be cultivated to obtain active substances without destroying the marine environment. There are also many ways to stimulate the cells of these marine organisms to produce certain chemicals that can be harvested and obtained in appropriate quantities by cloning the catalytic enzymes for production and transplantation into bacteria.

[1] SCHMITZ, F.J., E.D. LORANCE and L.S. CIERESZKO.--1967. Comparative biochemistry of gorgonians. Sterols and lactones of genus Ptero- gorgia. Chemistry of coelenterates 17. In: Youngker, H.W. (Ed.), Drugs from the Sea, pp. 315-318. Marine Technological Society, University of Rhode Island

Second Chapter

Impact of some plants on chemotherapy.

The role of some plant extracts in the treatment of certain diseases can be exposed as follows:

First: The effect of water and alcoholic extract of the leaves of the Sidr plant Zizyphusspin-csiti on the growth of some bacterial species.

There is no doubt that there is an inhibitory effect of the active substances of the cold alcoholic and aquatic extract of Sidr plant in inhibiting the growth of sp.Escherichia coli, Klebsiella, Staphyllococcus, Stretococcus feacalis due to the importance of The results of the study showed that these extracts are effective in inhibiting the growth of those germs outside the organism's body. The highest rate of inhibition is for Stretococcsus feacalis (20) mm at concentration (200 mg/ml)

The lowest inhibition diameter was for Klebsiella (8 mm at concentration (100 mg/ml) in alcohol and cold water extract. The results of preliminary preliminary detection of the cold and alcoholic aqueous extract of Sidr were also shown. They contain the effective materials of Flavonids, Alkaloids, Tannins, Terpenoid[1]

Uninary tract infection is one of the most common diseases in children (Hellerstein, 1998). Second in prevalence is respiratory infection (1974; Lettgen ,1993 Chakra borty ,1996 ; Straffon,) urinary tract infection usually results from attacking microscopic organisms of the urinary system that are predominantly pathogenic bacteria negative for cram dye sourced from the digestive tract since most urinary infections are caused by enterobacteriaceae, including bacillus E The scherichia coli that occupies a leading position among the races of this family in being a major pathogen to infection[2]

Other pathogens including Staphylococci, Streptococci, and sometimes fungi such as fungal Candida species. The ability and susceptibility of attacking bacteria to the host is essential in the development and development of infection based on a series of pathogenic overlaps Infection of the urinary tract occurs as a result of hypergrowth of highly effective bacteria in the urinary tract and then the migration of these bacteria to the bladder[3]

Most bacterial infections are treated with antibiotics, but nowadays physical therapy has spread to various kinds of herbs without recourse to medicines and synthetic substances. It is used to treat lush and painful joints and is used to treat the cortex, malignant tumours, malaria and immunodeficiency disease 0 as well as stomach pain. Sidr is also highly effective against the growth of fungi and bacteria, and has an inhibitory effect on the growth of many pigment-negative and positive bacteria[4].

The alcoholic extract of Sidr leaves also has high anti-positive bacterial growth efficacy

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[1] Salwa Hamza Hussain, Study of the Effect of Aquatic and Alcoholic Extract of Sedr Leaves Zizyphusspin-csiti on the Growth of Certain Bacterial Species, Iraq, Faculty of Education for Girls, University of Kufa, p. 4

[2] CHAKRA BORTY , P .(1996) . URINARY TRACT INFECTION: TEXT BOOK OF MICROBIOLOGY ST. ED- NEW CENTRAL BOOK AGENCY , CALCUTTA , INDIA , P ; 577 -581

[3] WINBERG , J; MOLLBY , BERGSTROM , J.; KARLSSON , K ; LEONARD SOON , L.; MILL,M.; TENEBERY , S.(2016). THE PAP GADHESION AT THE TIP OF P- FEMBRIA PROVIDES ESCHERICHIA COLI WITH A COMPETITION EDEGE IN BLADDER INFECTION OF CYNMDGUS MONKEYS . J. EXP . MED ., 182 (6) :1695

[4] RUSHTON, H.G. (2017). URINARY TRACT INFECTIONS IN CHILDREN. EPIDEMIOLOGY, EVALUATION AND MANAGEMENT . PEDIATR . URO , 44 (5) O 1133- 1169

Studies have shown that Sidr contains many active ingredients, the most important of which are alkaloids, Spinanina, jujube, which are responsible for anti-migratory activity, and flavonoids of all kinds, including antioxidant claicoside, phenols, soaps, pectin and Tannic acid, Zizyphic acid, tannins and turbines. The nature of the extracts was characterized by sticky texture[1].

the appearance of green is due to the dye chlorophyll and xantine. The distinctive aromatic smell of Sidr can be attributed to Sidr containing Volatile oils. It also contains mucus, vegan gel and gums. The results cleansed that all bacteria were sensitive to the aqueous and alcoholic extract of the plant and through diagrams (1,2,3,4) through the apparent variation of the concentration factor used to influence the growth of the bacteria until the maximum effect at concentration was (200) mg/ml of the extract. It was observed that increased concentration had an effect on increasing the inhibitory effect on the growth of those bacteria. (200 mg/ml of alcoholic extract in Stretococcsus feacalis 20 mm and that the least impact was at concentration (100) mg/ml of water extract in Klebsiella sp. up to (8) mm.

Increasing the efficacy of Sidr's aqueous and alcoholic extract may be due to the extract's effect on the permeability of the cell membrane and the functioning of the bacterial cell. The efficacy of Sidr extracts is attributable to the presence of phenolate compounds that have inhibitory effect on the positive and negative germs of the cram pigment[2].

Second: Extraction of pharmaceutical oils from plants

Some of these oils and medical preparations may be identified as follows:

1- **Volatile oils:**

Volatile oils: are distinguished by the fact that if they are vaporized they fly without decomposing. It represents the main material responsible for the distinct smell of plants. They are easily separated from their bearer plant organs by different distillation and extraction methods. These oils are known as Aromatic oils or Essential oils, and they are found either in all parts of the plant or in some of them such as leaves (such as mint), tree foreskin (such as cinnamon), fruits (such as anise) and in (jasmine);

They may exist in more than one part and vary in proportion in each part. The quality of these oils can be determined by several characteristics, most of which are colorless, fragrant, volatile, and dissolved, since most oils do not dissolve in water and dissolve in alcohol by 95%. They give the distinctive smell of flowers and plants in general and are found in liquid condition, but some are found as solid as camphor. Most of these compounds have aromatic odors and are mainly extracted for this purpose. Many of them have medical benefits such as regulating bowel movement, removing intestinal cramps that cause colic and have an effect on the uterus and treating menstrual disorders. Some of these compounds are absorbed by respiratory membranes, are useful for coughing and colds and are used to increase urine secretion[3].

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[1] Kawthar Fouad Al-Abed (2008). Anti-bacterial and anti-candia activity in volatile oils of some medical plants in Saudi Arabia Microbiology, aureus, Bacillus, Escherichia coli outside the organism's body. Master's thesis, Faculty of Education, Riyadh University.

[2] Salwa Hamza Hussain, Study of the Effect of Aquatic and Alcoholic Extract of Sedr Leaves Zizyphusspin-csiti on the Growth of Certain Bacterial Species, op. cit., p. 6

[3] HERNANDEZ, M; LOPEZ, R.; ABANAS, R.M.;V. AND ARIAS, A.(2014). ANTIMICROBIAL ACTIVITY OF VISNEA MOCANERA LEAF EXTRACTS .J. ETHNO PHARMA COLOGY, 41 ; 115 -119

2- Fixed oils

Most are edible and are used as a base for medical ointments, but some are composed of unsaturated mental acids that are not digestible or absorbable, and some are used as a medical facilitator such as castor oil.

3- Glucosides

The glycosides group is an important part of the active substances in medicinal plants. In fact, plants containing glycosides may cover most of the different types of known physiological effects. Glycosides are found extensively in most high-end plants and are rarely found in the sordid ones. Glycosides are concentrated in cellular juice for plant cell gaps

Glycosides: - organic compounds degraded by acids and by special enzymes, resulting in:

1. One or more types of sugars at least one of them

2-One or more non-sugary substances

the diabetic part is called Glycon, and the non-diabetic part is called Aglycon.

General characteristics of glycosides

Glycosides are hard crystalline or amorphous colorless compounds

Glycosides generally dissolve in water and alcohol and do not dissolve in the ether, although some dissolve in other organic solvents such as acetone and chloroform, which are non-volatile.

Most of these compounds' solutions are in water or alcohol once they taste and their photosynthesis is negative.

Glycosides in the plant are degraded by special enzymes and the enzyme and glycoside are found that affect it in the same plant but in separate cells and when the plant grinds in the presence of water the enzyme mixes with glycoside and their reaction results in glycolysis.

4- Alkaloids

They are rules that convert into salts by combining with acids and contain nitrogen, including morphine, papaverine, and have a narcotic effect and cafeine, which are found in cola plants and are found in coffee at 1% -2%, in tea at 1% -3% and in cocoa at 0.07% - 0.36% and some semi-alkali compounds are used to expel intestinal worms.

5- Bitters

These compounds differ in their chemical composition but share a bitter taste, most or most of which are semi-alkaline. They have a distinct effect in opening up appetite and improving digestion, thus strengthening their effect. They are also used to treat diarrhoea and some are used to expel intestinal worms[1]

6- Gums & Mucoids

They are carbohydrates that dissolve or mix well with water and are not affected by gastrointestinal fermentation and are positively palliative and protective against infections when used outwardly or internally, such as gum arabic, which is extracted from acacia and gum Indian. Mucous materials are found in marshmallows, such as in marshmallows and leggings, and are palliative to mucous membranes and skin pain.

Third: Mechanisms for extracting volatile oils from plants

Volatile oils are extracted from aromatic plants and their various organs using various distillation methods depending on the type of grass and plant organ. These methods are considered to be one of the oldest for ease of

[1] FUNFSTUCK, R.; SMITH, J.W.; TSCHAPE, H. AND STEIN, G. (1997): PATHOGENTIC ASPECTS OF UNCOMPLICATED URINARY TRACT INFECTIONS, RECONT ADBVANCES. CLIN. NEPH, 47(1):13-18

use, low cost and short duration. The amount of water and steam can be controlled in volume without any loss of oil and its compounds, and its natural characteristics in terms of smell and color.

There are the distillation-derived volatile oil estimation units, the Kolfinger unit, which is a glass unit consisting of a leaf with a drained neck and a kilogram unit consisting of a hollow glass leg, the first end, with an enlarged aperture mounted on the steam-to-liquid state The condenser then connects to an aperture of the compression equation, then the pressure-equation aperture is connected to a listed oil-ratio tube and the listed tube is connected to another hollow tube called the reflux tube that connects with the hollow leg and is attached to the paper and the importance of the reflux tube to maintain the distillation cycle and the sample does not burn. The following is a figure showing a consecutive set of Kolfinger units to estimate water-distilled volatile oil[1]

Figur "1"

Kolfinger units to estimate water-distilled volatile oils

Each method is summarized as follows:

(a) Water distillation method:

It is summarized in the immersion of the plant material in the water of the cylindrical vessel, which is placed on the thermal stove, made of inland galvanized iron, which has a tight cover to ensure that the vapours produced during the extraction process do not leak A thin up to 5 meters long twisted submerged in a basin with renewed cold water. The tip of the elbow-connected tube at the top and end of the cooling basin shall be in force near the bottom of the basin to the outside, twisted down to facilitate the liquidity of the distillation water and the resulting oil and shall be received in a glass container known as the oil separation vessel[2]

(b) Water and steam distillation: -

This type of distiller differs from the previous one in that the container has a mesh basket with plant material inside, and the basket is easy to lift externally. So there's no connection between the plant material and the water

[1] Ozguven, M. and Tansi, S. (1999) "Determination of yield and quality in marjoram as influenced by development periods" Turkish-J of Agr and Forestry. (23)1: 11-17.

[2] Kassem, A. M., I. E. El-Batawi and Mahassen M. S. (2006) "Effect of solar energy and other drying methods on quality of some medicinal plants" The 14th Annual Conference of the Misr Society of Ag. Eng., 22 November :766:782.

surface inside the bowl. When operational, heating and boiling occurs and water vapour rises upward, interspersing the plant material inside the mesh basket and the oil in its gaseous form escalates into the elbow of the vessel passing to the cooling and condensing devices.

This type of method is widespread in public and private agricultural abstracts companies. The most important plants and plant parts whose aromatic oil can be separated and distilled are citrus leaves, camphor, cinnamon and whole or crushed seeds of fennel, caraway, anise, cumin and dill[1].

(c) Steam distillation: -

The vessel has the mesh basket and does not have water in it or inside it at all. It is connected to the outside of its bottom base by a pipe installed with a steam generator, known as a boiler, using heat from the combustion of diesel or gas The boat's on the kettle. This method is economical, fast-functioning and easy to implement, and the resulting aromatic oil is highly productive and has naturally and chemically high characteristics and the most important fresh and dry used plants such as mint, marjoram, basil, marijuana, thyme and citrus[2]

How to distill oils with water

Plants to be distilled are submerged directly in the distillation pot. Heating is done directly, whether with an electric heater, gas, or charcoal. In this method, plants that are boiling-tolerant and partially dried, which are high in oil, such as cloves, must not exceed pressure within the atmospheric pressure system. The temperature also does not exceed the boiling point of water. One disadvantage of this method is that it gives relatively less oil and takes longer and the oil gains the smell of burning as a result of contact with the plant parts of the container bottom touching the heating flame[3].

How to distill oils with water and steam:

Plants to be distilled shall be placed in a perforated filter in the distillation pot, the water level shall be directly below the plant material and the plant material shall not be submerged. When heated, the water vapour shall rise and the plant material shall be interspersed with the volatile oil lumen into the condenser, so that the water vapour and the volatile oil shall be converted from the steam state to the liquid state and collected in the fluortina fluoid The oil is separated, purified, packaged in brown bottles and stored in the refrigerator until use. This method is used to separate the volatile oil from grains, leaves and wooden stems. The pressure within the system must not exceed the atmospheric pressure. The temperature also does not far exceed the boiling point of water, the amount of oil obtained is higher than that obtained by distillation by water, and the probability of oil degradation is lower

How to distill oils with direct steam.

The plant material is placed in mesh trays and the steam is generated in a kettle separate from the distiller. The steam rushes through a tube into the distiller. Much of the plant parts can be distilled such as seeds, leaves (fresh and dry), flowers and wooden stems that provide distillers with valves that can be controlled at steam pressure

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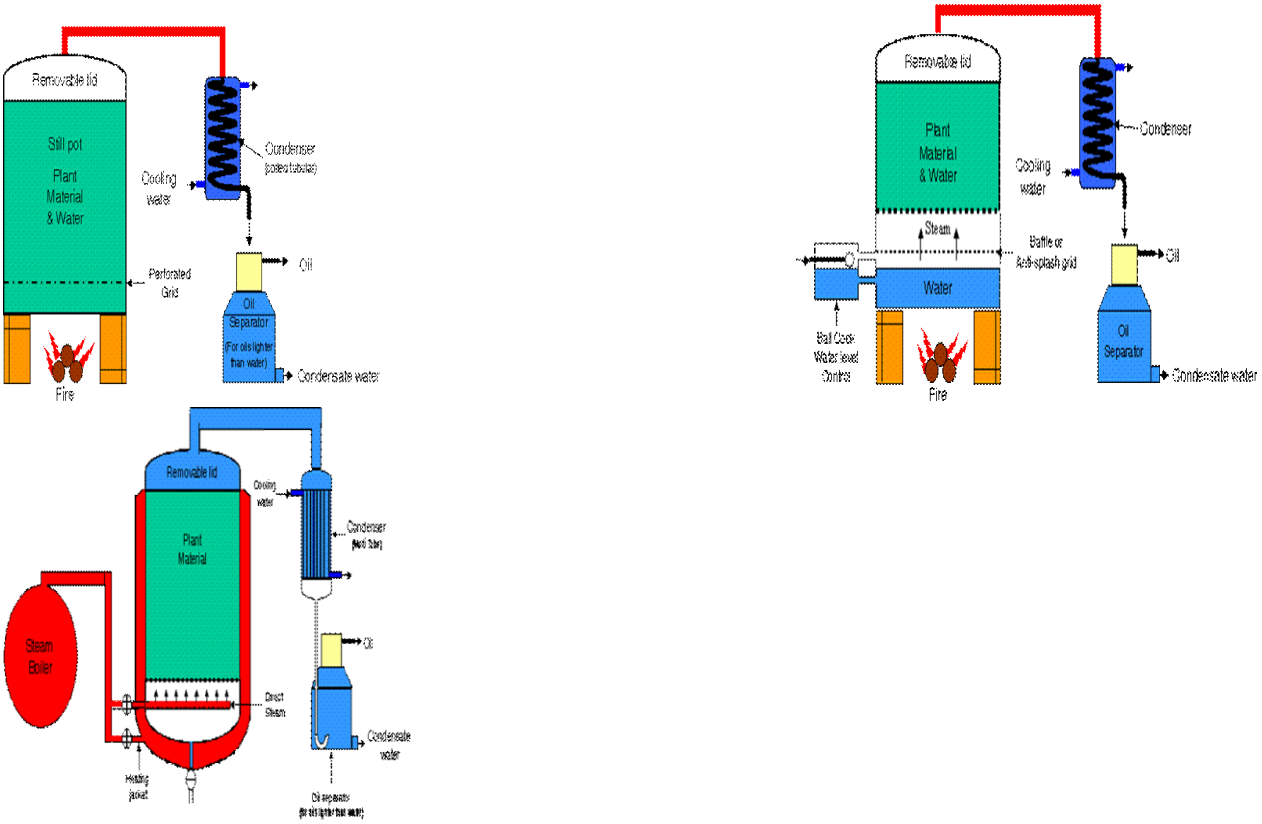
[1] Arafa, G. K. (2001) "Factors affecting drying aromatic plants" P.hD. Th.., Fac. of Agric., Al-Azhar Univ., Egypt:99-105.

[2] Arafa, G. K. (2007) "Optimum drying conditions for thin-layer drying of sweet basil" Misr J. Ag. Eng., 24(3):540-556.

[3] AOAC, Association of Official Analytical Chemists (2010) "Official Methods of Analysis" 15th ed. Association of Official Analytical Chemists, Washington D.C., U.S.A.p.p.10-14

degree And so raise the temperature. When packing the device, the size of the plant material should be reduced. The plant material is placed in a way that facilitates the passage of steam and increases distillation efficiency. This method is characterized by not burning plant material or decomposing essential oil components unless the steam temperature is too high. It is used successfully to extract peppermint oil, lemon weed, camphor and most other plants. It is considered more advanced than the previous two methods[1]



Figur "2"

Volatile oils distillation stages

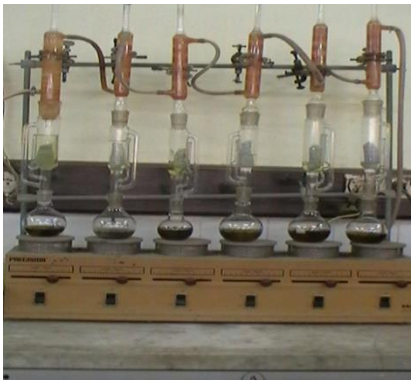
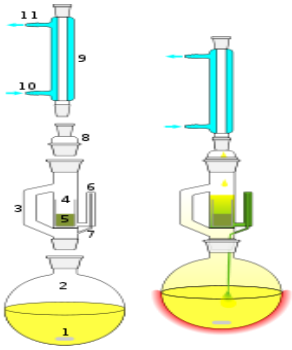
- Organic solvent extraction methods

Method of static solvents

Volatile solvent method.

Volatile oil extracted by organic solvents is estimated by the Soxlet device shown in the following diagram:

[1] Hazra, P., A. P. Kahol and J. Ahmed, (2015) "Study of the effect of mode of drying on the yield, quality and steam consumption in distillation of the essential oil of Mettha arvensis" India-perfumer 34 (1) :47-55.

Figur "3"

Sketch showing Soxlet device Soxelt Organic Solvent Volatile Oil Estimator

1-Static solvent method:

This method uses animal fats for both cows and pigs and is called the flowering method and repairs the extraction of raw oil or oil paste as in rose flowers. This method is considered one of the oldest solvent extraction methods, but it requires considerable effort and time, and its components and steps are summarized as follows:

(a) Fat purification:

Animal fats are purified by cleaning them well with running water several times and heated on a flame in a container at temperature (116 ° C) for 3 hours to dispose of protein by depositing them at the bottom of the bowl and drawing liquid fat by pouring. The heating process is repeated at least twice to obtain pure fat and the fat is washed with 95% alcohol 5: 1 of the fat and solvent). The alcohol is filtered and the precipitated fat is purified through a clean fabric and kept in copper containers covered in zinc and placed inside the refrigerator at zero degrees Celsius to deposit the pure fat and freeze it in a solid form[1]

(b) Glass tyre cleaning:

Wooden tyres with glass panels inside are cleaned and installed to protect against fracture with a 2% sodium phosphate solution to get rid of fatty residue and dry well to get rid of water.

(c) Animal grease pouring:

Mix the hot animal fat consisting of pig fat and cow fat 40-60% then stir well to combine fully and pour the mixture onto the two glass frame layers evenly.

(d) Floral position:

The flowers to be separated from the oil are fresh and immediately after picking and after being treated with special transactions are placed on the glass panels, then the fat layer is carefully distributed. Each glass frame needs between 0.75 and 1 kilogram of flowers. The frames are placed for two days or more at room temperature within a large chamber and the extracted flowers are raised The process is repeated every 48 hours until the weight of the extracted flowers reaches a single glass frame to 3-3.5 k, after which the oil-loaded fat is scraped

[1] Nedkov, N. K.; and G. V. Georgiev, (1991) "A study of different irriagation practices used for Mrntha piperita in Bulgaria" Journal of essential oil research. 3 (6) ;435-440.

and replaced with fresh new fat and the flowers are placed and so on The volatile oil content is known as fragrance fat[1]

E- Dissolution and extraction

Add 95% alcohol to the fragrant fat (1:2) and shake well on the cold to dissolve the essential oil with the solvent. Place the mixture inside the refrigerator below zero degrees Celsius for 24 hours. Filter the mixture to obtain the dissolved essential oil in the alcohol The precipitate is liquid essential oil known as absolute oil or free oil.

- Spray extraction:

This method is complex to implement and is not suitable for large-scale production because of its high cost, complex equipment and low oil production Molten and impulsive in the form of dense spray which in turn is saturated with essential oil in a gaseous form as a result of its ease of absorption then pulls out the fragrant fat

- Soaking extraction:

Fresh flowers are soaked in former animal grease liquid or in vegetable oils such as soybean oil or sunflower liquid oil, copper bowls covered inside with a zinc layer, to be placed over a water bath at boiling point until they are completely homogeneous. The contents are transferred to centrifuges to easily separate the essential oil, pull the cold-fragrant fat, shake well, repeat the alcohol placement several times, collect the oil-saturated alcohol and drip under pressure at 30 ° C, and the precipitate is the absolute or free oil[2].

Study results

First: Mixtures are natural products that possess medicinal properties containing two or more plants or herbs that can work individually, additionally or even synergistically used to restore the balance of health or the permanence of health and used in traditional Chinese, African and Indian medicine as typical mixtures. It has several methods of drug extraction, including:

• Infusions The preparation of herbs is indicated by leaving them in boiling water.

• It is a preparation that works by adding cold water to the required amount of the drug and then boil and leave on low heat for (5-10) minutes.

• Maceration is a preparation that works by adding cold water to the required amount of the drug.

• Tincture is an alcoholic solution (usually 30-70% water) prepared from medicinal plant materials. The herbal mixture is extracted during an indefinite period after compressing and straining so that the liquid material is separated from the solids. Mother tinctures can be prepared by using 70% ethanol and the solution and then diluted with water to determine the extraction rate, and can be prepared by using Cleserol as a corresponding solution for alcohol.

Second: There are medicinal essences, which are volatile compounds dissolved in alcohol or in alcohol and water together and produce medical spirits by mixing aromatic herbs with alcohol and then recover alcohol and volatile compounds by steam distillation.

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[1] T. Gornemann, R. Nayal, H. H. Pertz, M. F. Melzig, J. Ethnopharmacol. 117 (2008) 709 166. And L. Jirovetz, G. Buchbauer, I. Stoilova, A. Stoyanova, A. Krastanov, E. Schmidt, J. Agr. Food Chem. 54 (2006) 6303.

[2] Mujumdar, A.S. (1995) "Handbook of industrial drying" 2 nd. Ed. revised and expanded. Vol.(2).:150-174.

Third: Tablets are extracted and the grains are in two types, either covered or not covered and the grains are made of pressure (compress) active substances that are powdered after adding a suitable inert substance or mooring (to process mass) and often added substances responsible for improving color and taste to ensure the grains dissolve quickly when taken in water. Suppositories, which are usually grain-like and oval-shaped products, are for internal uses where they are dissolved by body heat and herbal products are used for this purpose. Besides ointments, it is a semi-rigid preparation usually intended for external uses, and the ointment usually contains medicinal substances in suitable carrier substances (water or oil solvents).

Fourth: There is no doubt that medicines and natural plant drugs extracted from plants and herbs were the only way to treat various disorders in previous eras Plant extracts are also researching things that are not available for treatment in modern medicine, such as age-related disorders such as memory loss and bone necrosis, as well as complex health disorders. Inula viscosa has been used in medicine since ancient times and the fruits of Maesa lanceolata var.goulungensis are known in folk medicine in East Africa to treat many types of diseases such as laryngitis, sole worms, hepatitis and cholera, and is used in Saudi Arabia to relieve rheumatism

Fifth: Many researches have proven the effectiveness of plant extracts in preventing the growth of bacteria, and there are many results in this area on different types of bacteria, the essential oil extract for pepper fruits has prevented the growth of bacteria isolated from food products: Salmonella sp , Proteus sp , Enterococcus faecalis , Serratia sp, Staphylococcus aureus , Escherichia coli , Pseudomonas aeruginosa and Bacillus sp

Sixth: The essential oil of mature Cestrum diurum leaves has shown strong laboratory activity against Pseudomonas aeruginosa and Staphylococcus aureus bacteria (Bhattacharjee I et al 2005).

Sometimes extracts may have an efficacy of up to 100% against bacteria, Iconic extracts of the roots and roots of the stem of the plant Picralima nitida gave a 100% efficacy against the bacteria Staphylococcus aureus ATCC126 and Pseudomonas aeruginosa

Conclusion

Medicinal plants can treat a lot of conditions, both in the healing process and in the alleviation of various diseases. Of course, all use of medicinal plants is bound to be carried out according to the type of disease we suffer from. Each plant has a number of features, so there are plants, which can help in several pathological situations. In addition, when mixing several plants together, we lose the qualities of those plants, and get a mixture of these plants.

Medicinal plants, like ordinary medicines, also have side effects. So it is important to check what dose we are taking, and how long we should consume this plant. It is important to clarify, that medicinal herbs cannot cure diseases such as cancer, heart or other serious diseases, but only help relieve the pain caused by these diseases. So it does not come as a substitute for traditional medicines.

As we indicated, medicinal plant is a plant that contains a medicinal substance or substances capable of treating or reducing a certain disease or that contains the raw materials used in the preparation of medicinal substances. We explained in the pages of the study the multiplicity of areas in which medicinal and aromatic plants can be used, and these areas are: -

Preparation of certain medications such as joint pain medications, rheumatic infections, hypertension medications and atherosclerosis.

The production of fixed oils where the seeds of some of these plants contain fixed oils that are included in the composition of some medical preparations.

Food processing for the treatment of atherosclerosis and angina such as sunflower seed oil, flax, castor.

Prepare cosmetics such as hair creams, soap.

Used in the manufacture of aromatherapy and perfume and from these rose plants, jasmine.

Besides the manufacture of insecticides, it depends on what is found in medicinal and aromatic plants of deadly toxins, whether for insects or fungi such as these plants (Albid thrum, Alderis, henna)

Medicinal and aromatic plants can be classified into groups with common characteristics or similar features or specifications with the intention of easily identifying these groups and studying all the characteristics that combine these plants and can be summarized in three ways:

I: - Morphological classification: -

Medicinal and aromatic plants are classified according to the part used that contains the active substance/to: -

1. Plants used in their entirety: - Plants where active chemicals are present in different plant parts without tending to concentrate or gather in one particular plant organ without the other.

2- Plants using their leaves: - They contain active chemicals in their leaves, such as basil, mint, aloe vera, tea and henna.

3 - Plants that use their flowers: - Plants whose active substances are found either in the lighthouse such as: "Chamomile, chrysanthemums" or found in the petals of flowers as in rose, jasmine, and vale or in the flower cup as in "hibiscus" or saffron.

Plants that use their fruits: - Plants that contain active chemicals in their fruits, such as rations, vinegar, and caraway.

Plants that use their seeds: Substances that contain chemicals in their seeds such as "pond, mustard, cocoa, coffee, castor and sunflower."

II. Physiological classification

Plants are classified according to the nature of the treatment or benefit that can be derived from the use of these plants to:

1-Plants for the treatment: - such as castor, licorice.

2- Analgesic or narcotic plants: -such as willow (analgesic), poppy

3 - Plants that prevent the decay of capillary blood vessels: - such as citrus and buckwheat.

Heart-stimulating plants: -like hummus, onions

Besides, pharmaceutical extracts from plants can be liquid, powder or viscous liquid from raw separated parts of the plant, and chemical compounds can be extracted from plant materials using water or organic solvents such as alcohols of all kinds such as: Ethanol, and as a result, the extract will contain only small dissolved molecules of structural material. (Usually about 20% of total weight) and non-dissolved substances (fiber and other substances about 80%) Later removed, volatile oil can be extracted by steam distillation or less by solvent extraction. The ratio of herbs to extract is typically 1:5 in natural extracts, or 1:100 for 1% oily herbs.

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