Aroma Therepeutic Effect of Essential Oil and different Extract of Rose on Human Body - A Review

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Abstract- Rose is an attractive plant that has been claimed to have anti-HIV, antibacterial, antifungal, antioxidant, antitussive, hypnotic, antidiabetic, and relaxing effects on tracheal chains, among other pharmacological characteristics. Massage with Rose essential oil contains a variety of phytochemicals such as flavonoids, vitamins, minerals, and others and is becoming increasingly popular for improving human health and alleviating various symptoms in patients. The goal of this study was to see how rose oil (Rosa damascena, Rosaceae) affected human autonomic measures in healthy people, such as blood pressure, blood oxygen saturation, lower back discomfort, skincare, haircare, pulse rate, and skin temperature. It's also used in aromatherapy, however this is a relatively new discipline. Rose aromatherapy is also used to help people cope with anxiety, cold , coughs, halitosis etc. extraction of essential oil from rose and there uses.

Keywords- Rose , Antibacterial , Antifungal , Aromatherapy

I.INTRODUCTION

The word aromatherapy means ‘treatment using scents’. It refers to the use of essential oils in holistic Healing to improve health and emotional well- being and in restoring balance to the body. Essential oils are aromatic essences extracted from plants,flowers,rees,fruits,bark,grasses and seeds. There are more than 150 types of oils that can be extracted. These oils have distinctive therapeutic, psychological and physiological properties that improve health and prevent illness. All essentialoils have unique healing and valuable antiseptic properties. Some oils are anti-viral,anti-inflammatory,pain-relieving,anti-depressant, stimulating, relaxing,expectorating, support digestion and have diuretic properties too[1]. Aromatic plants are a class of plants that contain fragrant compounds or essential oils (EO). The EOs can be sourced from petals and flowers, grasses, seeds, stems, leaves, needles, rinds and fruits, roots and rhizomes, woods, and resins. They are overly complex, volatile liquids including terpenes, sesquiterpenes, oxygenatedderivatives, aldehydes, oxides, phenols, ethers, acids, and ketones[2]. The earliest reference to essential oils such as sandalwood and cinnamon for human health and wellness dates to around 1200 BC, found in the ancient Hindu scriptures called the Vedas. Likewise, a written order for “imported oil of cedar, myrrh and cypress” was found on a clay tablet believed to be from Babylon dating to 1800 BC[4].

Over 3500 years ago, the Egyptians were using plants for medicine, healing massage, surgery, food preservation and mummification[6]. Such practices were also used by the Greeks and Romans who added their own rituals of fragranced baths and daily massages with fragranced oils[5].

Aromatherapy is an ancient concept used by the Chinese, Egyptians, and Romans in incense, their baths, and embalming the dead. The word aromatherapy was first coined by the French chemist Rene-Maurice Gattefosse in the 1920s. His first discovery of the healing nature of lavender essential oil was through serendipity when he accidentally soaked his burnt hand in pure lavender oil and found that his hand was rapidly healing. His exploration of essential oils and his experiments in their healing nature was initiated then. In addition to their healing nature, these aroma oils can influence mood, behavior, and wellness[7]. The plants hold these oils throughout their thallus structures, such as reservoirs, glandular hairs, special cells, and intracellular spaces. Plants are also protected from pathogenic encounters and temperature fluctuations with the help of these essential oils [8].

This therapy got a lot of attention in the late twentieth century and is still highly popular in the twenty-first century, and it is classified as aroma scientific therapy because of its importance, popularity, and widespread use. Essential oils have become increasingly important in medicinal, cosmetic, aromatic, and fragrant applications. Essential oils, which are claimed to be highly concentrated chemicals derived from flowers, leaves, stalks, fruits, and roots, as well as distilled from resins, are used as the major therapeutic agents in aromatherapy.Essential oils are made up of a combination of saturated and unsaturated hydrocarbons, alcohol, aldehydes, esters, ethers, ketones, oxides, phenols, and terpenes, all of which have distinct scents. They are clear, colourless liquids with a high refractive index. These oils are so powerful and concentrated that they revitalise and work on pressure points. Essential oils can be found in a variety of placesin plants, including pockets and reservoirs, glandular hairs, specialised cells, and even intercellular gaps. The evaporation of essences from the plants protects them from bacterialattack, and the essences' warming aura protects the plant from temperature variations.They are provided in modest amounts through a variety of techniques,including inhalation, massage, and simple skin treatments, and they are rarely taken internally.Aromatherapy is based on the inhalation and external use of essential oils for the treatment of mental and physical balance. These oils' therapy is recognised to ease stress, revive, and regenerate the individual in preparation for the next day's work.

1.1 Therapeutic benefits of essential oils

The feeding with aromatic herbs, spices and some dietary supplements can supply the body with essential oils. There are a lot of specific dietary sources of essential oils, such as example orange and citrus peel, caraway, dill; cherry, spearmint, caraway, spearmint, black pepper and lemongrass. Thus, human exposure to essential oils through the diet or environment is widespread. However, only little information is available on the estimation of essential oil intake. In most cases, essential oils can be absorbed from the food matrix or as pure products and cross the blood brain barrier easily. This later property is due to the lipophilic character of volatile compounds and their small size. The action of essential oils begins by entering the human body via three possible different ways including direct absorption through inhalation, ingestion or diffusion through the skin tissue[9].

Essential oil compounds are fat soluble, and thus they have the ability to permeate the membranes of the skin before being captured by the micro-circulation and drained into the systemic circulation, which reaches all targets organs[10].

Another way by which essential oils enter the body is inhalation. Due to their volatility, they can be inhaled easily through the respiratory tract and lungs, which can distribute them into the bloodstream[11]. In general, the respiratory tract offers the most rapid way of entry followed by the dermal pathway.

Oral ingestion of essential oils needs attention due to the potential toxicity of some oils. Ingested essential oil compounds and/or their metabolites may then be absorbed and delivered to the rest of the body by the bloodstream and then distributed to parts of the body[9].

II.CONVENTIONAL EXTRACTION METHODS

2.1 Hydrodistillation

Hydrodistillation is the oldest and simplest oils extraction method which was discovered by Avicenna and the first to develop extraction through the alembic. Rose was the first plant extract used and purified by this method. The procedures start with immersing the plant materials directly into water inside the alembic (vessel), and whole mixture was boiled. The devices include a heating source, vessel (Alembic), a condenser to convert vapor from vessel onto liquid, and a decanter to collect the condensate and to separate essential oils with water**fig.(1)** [12].

This extraction technique is considered as a unique method to extract plant materials like wood or flower and is frequently used for extractions involving hydrophobic natural plant material with a high boiling point. As the oils are surrounded by water, this method is able to protect essential oils to be extracted at a certain degree without being overheated. The main advantage of this extraction technique is its ability to isolate plant materials below 100°C[13].

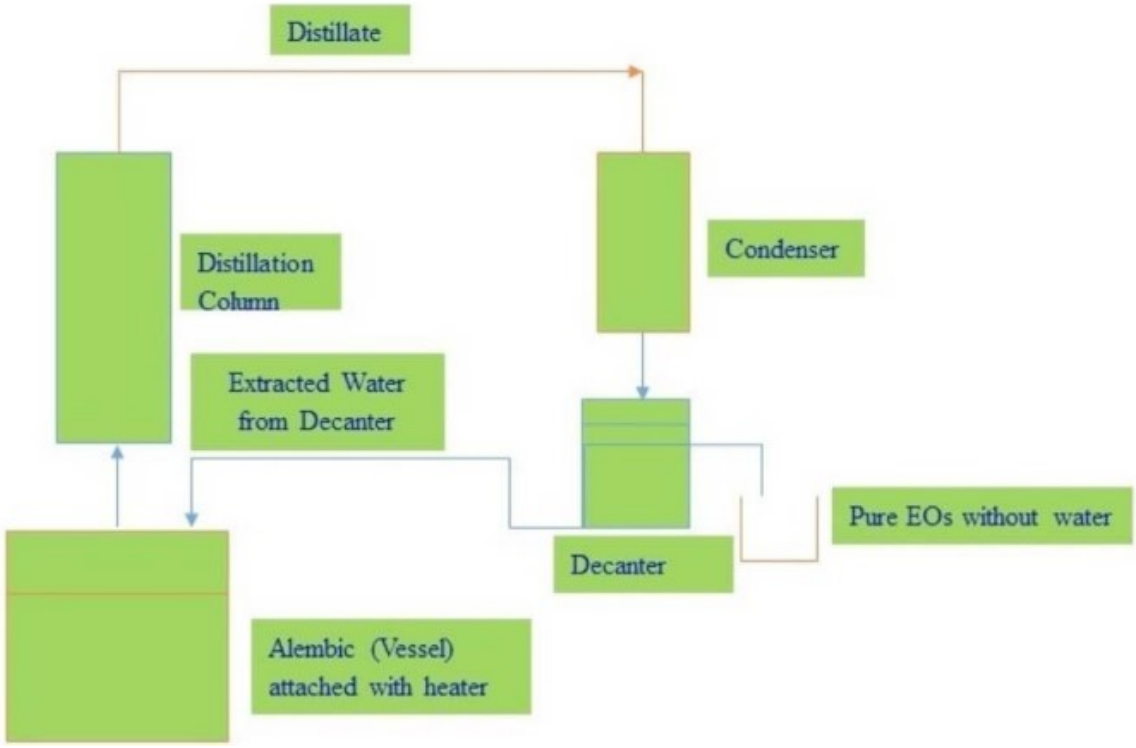

Fig. (1). Flow diagram of hydrodistillation extraction process[13].

2.2. Steam Distillation

In essential plant oil extraction, steam distillation method is the broadest technique applied. The percentage of essential oils being extracted by this technique is 93% and the remaining 7% can be further extracted by other methods [14]. Basically, the process started by heating of plant material using steam which is supplied from steam generator . Heat is the main factor determining how effectively the plant material structures break down and burst and release the aromatic components or essential oils [15].

Masango developed an innovative steam distillation extraction technique to increase the isolated essential oil yields and reduce the amount of wastewater produced during the extraction process. The system uses a packed bed of the plant samples, placed above the steam source. Only steam is allowed to pass through the plants and boiling water

does not mix with the botanical materials. Therefore, the process requires less steam and the amount of water in the distillate can be reduced [14].

2.3 Hydrodiffusion

Hydrodiffusion extraction method is an extraction process in which steam is supplied to a container which holds plant materials. This technique is only applied on dried plant samples that can be damaged at boiling temperature. In the steam distillation process, steam is applied from the bottom of the steam generator, whereas in the hydrodiffusion method, steam is supplied from the top of the generator. This process was carried out at low pressure or vacuum and steam temperature can be reduced below 100°C [16].

This steam diffusion method was further enhanced by adding microwave technology. Bousbia and research team have investigated the difference in performance between innovative Microwave Hydrodiffusion and Gravity (MHG) and a traditional method like hydrodistillation [17]. In another study, the isolation of essential oil from orange peel was studied using an innovative steam diffusion technique (SDf) called microwave steam diffusion (MSDf). The extraction performance results showed that the isolation period of the essential oils by MSDf technique is within 12 minutes and had similar yield and aromatic profile to those obtained by SDf for 40 minutes [17].

2.4 Solvent Extraction

Ordinary solvents like acetone, petroleum ether, hexane, methanol, or ethanol have been implemented by this technique to extract fragile or delicate flower materials which cannot be extracted using heat or steam supplied [18]. Generally, the plant samples are mixed with solvents to be extracted by mildly heating the mixture, and the process is followed by filtration and evaporation of the solvents. The filtrate contains a resin (resinoid), or the mixture of wax, fragrance, and essential oil. Alcohol is combined with the filtrate mixture in order to dissolve the essential oil into it and thereafter distilled at low temperature. During the distillation process, the alcohol absorbs fragrance and is evaporated while the aromatic absolute oil remains in the pot residue. Compared to other methods, this method is more complicated for essential oils extraction, and as a result, time-consuming and more expensive [19].

2.5 Supercritical fluid Extraction

Conventional extraction techniques such as solvent extraction and steam distillation need more time to undergo the extraction process and a large amount of organic solvents are required [20]. Additionally, the disadvantages of these techniques like various volatile components losses, poor efficiency of oils extraction, degradation of unsaturated compounds, and toxic residues from extraction process need to be encountered [21, 22]. The supercritical fluid state is mainly depending on two factors which are the fluids critical pressure, Pc and critical temperature, Tc. Fluids with these critical parameters exhibit very interesting properties such as low viscosity, high diffusivity, and density closer to liquids [13]. Carbon dioxide is used as a supercritical solvent for the extraction of essential oils due to its numerous attractive properties: (i) easily reach critical point (low critical pressure, Pc : 72.9 atm, and temperature, Tc : 31.2°C); (ii) unaggressive for thermo labile molecules of the plant essence; (iii) chemically inert and toxic; (iv) nonflammable; (v) available in high purity at relatively low cost; (vi) easily eliminated; (vii) its polarity similar to pentane which makes it suitable for extraction of lipophilic compounds [23, 24]. Generally, the principle of supercritical fluid extraction process involves the use and recycling fluid in repeated steps of compression/decompression. The supercritical state of CO2 can be achieved by highly compressing and heating this fluid. Then, it passes through the raw plant material to load volatile matter and plant extracts. The process is followed by decompression steps, where the mixture of CO2 and plant extracts are routed to two separators where the fluid is gradually decompressed to separate the obtained extracts from the CO2. The CO2 is released from second separator and recycled into storage tank, and no solvent residue remains in the final product since CO2 easily reverts to a gas under normal atmospheric pressure and temperature [25].

2.6 Subcritical Extraction Liquid

The use of water at subcritical state has been reported by many researchers and found that this is a better and powerful alternative of essential oils extraction technique [26]. The definition of subcritical stage of liquid is the time when liquid reaches pressure higher than the critical pressure, Pc and lower than the critical temperature, Tc or vice-versa. The fluids that are used to extract essential oils using this method are water and CO2. The subcritical state of fluid offers several superior characteristics such as lower viscosity, lower density, and enhanced diffusivity between gas and liquids. This extraction technique is considered the best alternative approach as it enables a fast essential oil isolation process, conducted at a low working temperature. Moreover, it is a costefficient extraction, simple and environmental friendly process [26]. In this process, the required duration of extraction is only 15min compared to 3h required to extract essential oils by using conventional methods. Essential oils with more valuable properties which are a higher amount of oxygenated components with no significant presence of terpenes can be obtained and allow substantial cost saving in terms of both energy and plant materials [18]. Kubatova and co-workers investigated the lactones extraction from a Piper methysticum root by using subcritical water extraction, and this method was compared with Soxhlet extraction with water. The working temperature for subcritical water extraction was at 100°C and 175°C, and the extraction time required to extract the lactones was 20 min and 2h, respectively. Soxhlet extraction method showed a large difference in extraction time compared to subcritical water method, and required 6 hours to extract the oils and produced lower yields by 40% to 60% [27].

2.7 Solvent Free Microwave Extraction

The impediments of ordinary extraction techniques, such as solvent and hydrodiffusion, are the losses of several evaporative constituents, poor isolation coherence, and toxic solvent residues at the final product stage. These challenges prompted the consideration of Solvent-Free Microwave Extraction (SFME) for various applications [17]. This technique is an expeditious isolation of essential oils from spices, aromatic herbs, and dry seeds. Several advantages of SFME have been reported by researchers, which can be summarized: to obtain essential oils with high yield and selectivity, shorter extraction time, and environmentally friendly process [17].

SFME involves a combination of two techniques which are heating plant samples using microwave technology followed by dry distillation which operates at an atmospheric pressure in the absence of any solvent. Bayramoglu et al. applied SFME method to extract oregano at different microwave power; 622W, 498W, 373W, and 249W, while the essential oil yields were determined depending on each different microwave power used. The results showed maximum yields achieved at 0.054, 0.053, 0.052 and 0.049 mL/g of oregano essential oil at 622W, 498W, 373W, and 249W power levels, respectively. Exception with working at lowest microwave power (249W), all other yields were found to be higher (p 0.05) [28]. Compared to hydrodistillation, the yield extracted oregano essential oil was only 0.048 mL/g which about 6% slightly lower than SFME oregano oil highest yield. Later, Ferhat et al. presented the comparison of SFME method with traditional methods in terms of extraction periods, yields, impact of the technique used towards the environment, solvent residues content, and antimicrobial activities. It was demonstrated that microwave extraction offers a shorter isolation period of essential oil (30 min compared to 3 h for hydrodiffusion and 1 h for cold pressing); 0.24% of yields from SFME which is much better than hydrodiffusion and cold pressing with 0.21% and 0.05%, respectively; high energy consumption for performing hydrodiffusion and cold pressing (using mechanical motors) compared to rapid microwave extraction; no water and solvent used in SFME make the extraction process as cleaner features, and high antimicrobial activities of essential oils obtained by SFME technique [29].

III.COMMON PREPARATION METHODS:

3.1Preparetion of light essential oil

In a saucepan, bring a few inches of water to a boil, then remove from heat. Fill a glass jar with about a cup of oil. To avoid competing with the flowers, choose an oil with little natural odour; olive oil can suit in a pinch. Place a cup of chopped, shreds, or "bruised" rose petals in the oil. To coat the petals, swirl the jar around but don't shake it. Place the jar in the boiling water and cover it. Warming the oil will assist the rose petals release their aroma. When the water has cooled, place the jar in a warm location, such as a sunny windowsill. Allow at least 24 hours for the jar to sit in the warm location. Strain the oil through a cheesecloth, squeezing on the petals as much as possible to extract as much oil as possible. You can use fresh petals to repeat steps 1-6 for a stronger-smelling oil. It's possible that you'll have to repeat the process 5 or 6 times to achieve the appropriate degree of aroma. Pour clear oil into a dark, covered bottle (dark glass will help block out sunlight and keep the oil more stable)

3.2Preparation of Rose water

Making rose water is an easier process, but the results will be less effective. Simply pour boiling water over rose petals (roughly one part rose petals to two parts water) and drain when cold to make rose water the easy way. Keep it in a sealed container in the refrigerator for up to a month.

3.3Rose Extract with glycerin (infused rose oil)

Carefully wash the rose petals to remove any insects or dirt. Then thoroughly dry. Pour the glycerin over the petals in a big sterilised glass jar, making sure they are completely covered in the liquor. Then seal the jar and store it in a dark, cool place for 2-3 days, such as a cupboard. Sieve the rose glycerin mixture to remove the petals before decanting it into sterilized glass jars or dropper vials.

IV.RESULT

Sample 1 is the most fragrant oil in all three samples which can be use in essential oil diffusers in room ,home ,offices to use as inhaling essential oil which can help them to prevents most of the diseases.Loghmani-Khouzani et al (2007) found more than 95 macro- and micro-components in the essential oil of R. damascena from the Kashan regions of . Among them, eighteen compounds represented more than 95% of the total oil. The identified compounds were; β-citronellol (14.5-47.5%), nonadecane (10.5-40.5%), geraniol (5.5-18%), and nerol and kaempferol were the major components of the oil (2). Analyses of rose absolute showed that phenyl ethylalcohol (78.38%), citrenellol (9.91%), nonadecane (4.35%) and geraniol (3.71%) ethanol (0.00-13.43%), and heneicosane were the major compounds (35). In another study, the composition of rose was phenyl ethylalcohol (72.73–73.80%), citrenellol (10.62–11.26%), nerol (2.42–2.47%), and geranial (5.58–5.65%) (36). Hydrosol was also found to contain four constituents; geraniol was the major compound (30.74%) followed by citrenellol (29.44%), phenyl ethylalcohol (23.74%), and nerol (16.12%) (9, 35).

The medicinal functions of Rosaceae are partly attributed to their abundance of phenolics compound. Phenolics possess a wide range of pharmacological activities, such as antioxidants, free-radical scavengers, anticancer, anti-inflammatory, antimutagenic, and antidepressant [48, 49-50].

V.CONCLUSION.

Human research have looked into a variety of medicinal qualities of rose oil, the most notable of which include analgesic and antidepressant effects. In human investigations, rose oil has been found to have no negative effects. Other pharmacological effects of this oil have been attributed to it by Persian Medicine, including anti-inflammatory and anti-hemorrhoidal characteristics; however, no clinical investigation has been conducted on these activities yet.

As a result, clinical trials to assess these pharmacological activities should be designed. In addition, more study involving larger populations is needed to determine the efficacy and safety of rose oil treatment. In general, and in India in particular, improved standards of living and changing lifestyles have increased the usage of perfumery, aroma, and flavor goods, and an essential oil which is made in this paper can be use as a diffuser. The industry is expanding at a pace of 5% to 7% per year. In India, the growth rate is likely to be significantly higher, as these goods are now used by more than 10% of the population, compared to only 3% before 1980. The numbers for India's exports in many categories show favorable developments. In the coming years, with supportive government policies and active advertising and marketing techniques by traders/exporters, India will be able to enhance its share of the international market, and the Indian essential oil sector will have a bright future.

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