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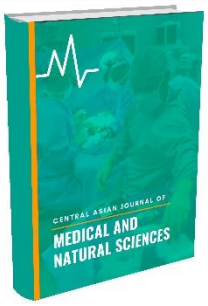

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POSSIBILITIES OF USING ESSENTIAL OILS IN OBSTETRIC AND GYNECOLOGICAL PRACTICE

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ABSTRACT: The review discusses the prospects for the use of essential oils in medicine. It was found that drugs based on herbal remedies containing essential oils combine safety, a wide range of pharmacological activity, including anxiolytic, antiviral, immunomodulating, antioxidant, anti-inflammatory and antimicrobial properties. The above studies indicate their high demand in medicine, in particular in the treatment of urogenital infections in pregnant women, and the properties of essential oils and the physiological aspects of their effects on the body have not been fully studied; the range of their use in obstetric and gynecological practice can be significantly expanded.

KEYWORDS: essential oils, vaginal microbiocenosis, cervico-vaginal infections.

INTRODUCTION

Essential oils have been known to us since ancient times for the treatment of certain diseases, as well as for cosmetic purposes. The first descriptions of the use of essential oils in medicine come from countries such as India, China, Egypt. Such ancient scholars as Hippocrates, Galen and Avicenna used essential oils to treat many diseases in their time and highlighted this in their writings [1,2]. This is illustrated by the use of rose oil by Hippocrates and his students for the treatment of diseases of the gastrointestinal tract, as well as in the treatment of gynecological diseases. Essential oils were widely used in the Middle Ages as antiseptics against various infections and epidemics [2,3].

The results of the WHO global review of national policies on traditional and complementary / alternative medicine and the regulation of herbal medicines in 2003 indicate that the herbal medicines market is expanding steadily [4]. European countries, as well as CIS countries, not only import, but also produce and use herbal medicines in a wide variety as an addition to the treatment with conventional medicines [5]. As you know, essential oil flora has about 3 thousand species of medicinal plants, but only 150-200 species are of industrial importance. Essential oils are especially rich in plants such as mint,

lavender, sage, basil, anise, fennel, cumin, coriander and others [6,7,8]. Essential oils can be found in various parts of plants: in leaves, stems, flowers, roots, seeds, bark and wood in free state or in the form of glycosides. Such cereal essential oil plants as fennel, anise, coriander, cumin, have a wide range of biological effects on the human body. The components of these plants have antimicrobial, antioxidant, antifungal, antiviral, as well as tonic, multivitamin, and other properties [8-13]. The effect of plant essential oils on the human body has not yet been studied, and therefore most drugs have appeared on the basis of empirical knowledge. Therefore, when statistics proved their effectiveness, they were widely used and then gradually entered the market. One of the greatest obstacles to the development and widespread use of aromatherapy is, first of all, the person and his consciousness.

MAIN PART

In modern medicine for the treatment of diseases there are standards, various norms and definitions, according to which the system functions, and it cannot go beyond certain limits and accept anything else. But the human individual did not arise, and will never exist, as a standard, it is a heterogeneous product of nature, which, like the environment, obeys the laws of evolution. That Change is life - this statement is undeniable, and in the modern world it acquires a new meaning that can be easily understood if we turn to the field of production of numerous chemical and synthetic drugs. All of these substances are almost always highly effective at the time of their occurrence, although there are negative side effects. But such efficiency decreases over time, and then simply disappears. A vivid and classic example in this case are antibiotics, which were originally substances of natural origin, but today exclusively synthetic production, devoid of any connection with nature, in this regard, reports about "superbacteria" are increasingly appearing in the literature, upon the occurrence of which no antibiotic does not give results. It is necessary to understand and take into account that not only humans, but also lower organisms, which are biological species with genetic information, tend to reproduce and survive, their adaptive abilities are much higher. And this ignoring of the basic laws of nature, according to the majority, has led pharmaceuticals to the wrong path. Nature does not give us certain standards - but individuality, originality, this also applies to essential oils, which are very rarely included in pharmacopoeias, but in this case “suffer from completely senseless standardization” [6-15].

The most important and main product of the processing of raw materials of essential oil plants are essential oils [6-15]. To date, the component composition of many essential oils that are widely used from essential oil plants has been well studied, and their composition is quite stable [8-11,14,15,35-40]. Essential oils have a wide range of biological activity, in the recommended doses are low toxic and available for mass use [6-10,13,14,16-34].

It is assumed that the effect of essential oils is that when they are used, the permeability of the cytoplasmic membranes of microorganisms decreases, the activity of their aerobic respiration decreases, they counteract survival, this makes it impossible to adapt to an aggressive agent. And this indicates their lack of mutagenic effect, which leads to the emergence of new, more aggressive strains and races. They have the ability to penetrate antibiotics into the cells of the human body, creating the ability to reduce the dose of antibiotics in severe inflammatory diseases [41]. Essential oils and their components are part of various drugs, a wide spectrum of action - analgesic, irritating, antimicrobial, immunomodulating, antioxidant, affecting the aging process of the body [41]. According to Lapshin, the spectrum of biological activity of aromatherapy drugs is very wide and includes antibacterial effects, effects on the central nervous

system, effects on the cardiovascular system, effects on metabolism and immunity, effects on the respiratory system, effects on the digestive systems, radioprotective effects . The effect of aromatic preparations on the central nervous system is to increase efficiency, stimulating effect, normalization of sleep. And the effect on the cardiovascular system consists in lowering blood pressure, increasing the amplitude of heart contractions, improving the processes of myocardial oxidation, in the cardiotonic effect associated with their effect on the permeability of capillaries.

The following main components of essential oils with high antibacterial activity are distinguished: Phenols: Thymol - in azhgon, savory, monard, thyme (thyme); Carvacrol - in oregano, monard, savory, thyme; Eugenol - in the basilica of the eugenol, clove, citronella; Terpene alcohols: Linalool - in coriander, narrow-leaved lavender, clary sage, linalool forms of mint; Geraniol - in a rose essential oil, medicinal melissa; Menthol - in mint; Aldehydes: Neral and geranial, citronellal - in the melissa officinalis; Ketones: Thujone - in some types of wormwood: wormwood, ordinary, Crimean, as well as medicinal sage, tansy. Fenhon - in ordinary fennel; Karvon - in fragrant dill, common caraway seeds, in carvone forms of mint; Pinocamphone - in hyssopus officinalis; Camphor - in the sage of the medicinal; Menton - in mint; Esters: Anethol - in ordinary anise, ordinary fennel; Tarragon (methylchavicol) - in tarragon, tarragon ordinary, anise ordinary. The use of phenolic-rich essential oils is very effective in many types of infections. The conducted studies allow us to distinguish among the most active components of the essential oils carvacrol and thymol. These phenolic compounds are found in significant quantities in essential oils of such representatives of the family Iasnatkovye, like oregano, savory garden [13,41].

Many essential oils have antioxidant properties, the effectiveness of which is not inferior in effectiveness to synthetic antioxidants. At the same time, they are practically safe for health. Essential oils containing phenols such as thymol, carvacrol and eugenol possess these properties. An analysis of the antioxidant activity of the essential oils of representatives of the Yasnotkovye family — common oregano, common thyme, and savory garden, containing carvacrol and thymol, and the synthetic antioxidant ionol in comparison showed that they are twice as good as ionol in this indicator [42]. However, it is noted that the amount of antioxidant components in the studied essential oils should not be equated with their total antiradical activity. It is likely that for the manifestation of the antioxidant and antiradical properties of essential oils, it is important not only to contain individual components in them, but also their combination, including with other components containing them. Many researchers come to this conclusion [42,43,44]. It was revealed that oregano essential oil inhibits the oxidation of unsaturated fatty acids, and with an increase in its concentration, antioxidant activity increases [45]. Research EB Burlakova and colleagues revealed the ability of savory and oregano essential oils to inhibit the aging process in mice, enriching their brain with useful polyunsaturated fatty acids [46].

The data presented allow us to speak about the geroprotective effect of thymol and carvacrol phenols, therefore, all oils containing these compounds or compositions of essential oils based on carvacrol and thymol-containing oils are expected to increase life expectancy when systematically taken [46].

A study of the antioxidant properties of essential oils of black pepper, ginger pharmacy, cardamom real, juniper Pinchot, common fennel, matsis, lemon sorghum and caraway seeds using the method of capillary gas-liquid chromatography showed that the most active components of oils, such as cyclic monoterpene hydrocarbons (and γ-terpinene, α-terpinolene) and citral (neral and geranil). Essential oils with a high content of non-phenolic components also exhibit antimicrobial, antibacterial activity [47]. The

study of the effect of essential oils of some wild plants growing in Siberia on a number of opportunistic microorganism strains revealed that the most powerful bactericidal properties in relation to all bacteria are exerted by peppermint and lemon balm essential oils. Highly active against gram-positive bacteria (Staphylococcus aureus, Staphylococcus aureus methicillin-resistant strain of S. aureus) were peppermint essential oils (menthol); Juniperus Juniperus communis L. (family Cupressaceae), containing α-pinene, sabinen and limonene as the main components; odorous dill (carvon). The data obtained by the authors indicate that differences in bactericidal activity of different essential oils can reach 100 times [48]. The greatest effect of the influence of dill essential oil was recorded in experiments with Candida albicans, a significant bactericidal effect was noted on Salmonella typhimurium and S. dysenteriae [49]. The tested antifungal activity against Microsporum canis, Trichophyton rubrum, C. albicans showed such essential oils as anise lofant (components - methylchavicol (62.08%), methyleugenol (24.01%), D-limonene (8.14 %) [50]. One of the urgent problems of modern practical medicine is the drug resistance of bacteria. An increase in the number of antibiotic-resistant microorganisms has been noted [51]. Broad-spectrum antibiotics (penicillin, tetracycline, chloramphenicol, etc.) can inhibit the growth of normal microflora human cat Some of them are antagonists of yeast-like microorganisms. Often this leads to the development of candidal lesions of organs [52]. Bactericidal and bacteriostatic effects are inherent in rose essential oil. Crimean rose essential oil turned out to be very effective against Stenotrophomonas maltophilia and Pseudomonas aeruginosa, and Bulgarian rose oil against Acanthomonas aeruginosa and Bulgarian rose oil Klebsiella pneumoniae [53].

Melissa officinalis is known to be one of the most commonly used plants used in medicine [7]. Its biological activity is due to the content of essential oils in plant materials, which contain citral, citronellal, and geraniol as the main components. In addition, it includes geranyl acetate, myrcene, β-caryophyllene oxide, β-caryophyllene and other terpenoids. Ursolic, oleonol and rosmarinic acids, phenolic compounds, flavonoids (luteolin and apigenin glycosides) and other compounds are also active components contained in the lemon balm raw materials. More than 200 compounds have been identified and described in the composition of lemon balm essential oil [55,56,57]. This plant, which contains essential oils, has antiviral, anti-inflammatory, bacteriostatic properties. Aldehydes (citral, citronelal) are most active against a number of pathogenic fungi and mycobacterium tuberculosis, while alcohols (geraniol) are less active. Compared with lavender and rosemary, representatives of the Yasnotkovs, the antimicrobial effect of lemon balm essential oil is more pronounced [55]. The results of a number of studies indicate the high sedative, anxiolytic, antidepressant, antiviral, immunomodulating, antihistamine, antioxidant, antimicrobial, anti-inflammatory properties of this plant. Therefore, it is not in vain when creating combined neurotropic drugs that it is recommended to use the biologically active substances of Melissa officinalis as the dominant components [58,59]. Given such a wide range of pharmacological activity and safety, drugs based on lemon balm can be widely used in pediatric practice [7,57].

Essential oils of different species of the wormwood genus Artemisia L. also have antibacterial effects [60]. In the conducted research experiments, the active antibacterial effect on the formation of biofilms by bacteria of the species Staphylococcus epidermidis, S. aureus, E. coli, as well as the fungus C. albicans was exerted by the essential oils of blunt-leaved wormwood, santolinolum wormwood, and gray wormwood [60]. Annual wormwood essential oil, containing up to 200 components (the main of which are artemisia ketone, artemisia alcohol, camphor, 1,8-cineole, etc.), is characterized by high antibacterial and

antifungal activity. According to the researchers, the isolation of sesquiterpene artemisinin lactone from wormwood made it possible to create the most effective drug for treating malaria [61].

Essential oils differ from antibiotics in that they combine a bactericidal effect with antifungal activity. The impact of essential oils of lavender, rosewood, eucalyptus, fir on some gram-negative bacteria can reduce the likelihood of their formation of resistance. This allows us to look for further ways to use essential oils against antibiotic-resistant microorganisms both in monotherapy and in the complex treatment of infections [62].

All means used in aromatherapy, as already noted, are based on the medical and biological properties of essential oils that contain volatile compounds - terpenes and other biologically active components. The chemical structure of many of these compounds, as well as biological or physical effects, are very similar to the precursors of steroid hormones - prostaglandins, which have a number of important body regulators. It can be assumed that between the components of plant and animal origin in evolutionary terms there is a conditional relationship. This explains the similarity of their structures and the mechanism of action [8].

It is also important that even with prolonged use of essential oils resistant strains of microorganisms do not occur. And this makes it possible to use these substances for prevention and for a long time. Essential oils such as anise, eucalyptus, fir, tea tree and others are used as secretolytic drugs, as they are excreted through the lungs; they have a beneficial effect on the surface activity of lung surfactant, which increases the minimum surface tension several times. Some of them, for example, lavender, lemon balm, thyme, marjoram rose and thyme affect intestinal motility, stimulate the synthesis of phospholipids and bile acids. Essential oils have immunotropic properties. Thus, pronounced immunostimulating properties, i.e. the activity of T-cell immunity is possessed by lavender and tea tree essential oil, and the activity of B-cell immunity is by the essential oil of wormwood lemon and eucalyptus. Immunomodulatory activity is also manifested in essential oils such as basil, jasmine, fir, sage and cloves, they show their activity against the background of a decrease in immunological reactivity [2,10,14]. In official medicine, a decrease in immunological reactivity is characteristic of many immunomodulators (thymalin).

The oxidation process with the formation of active free radicals in the tissues of living things is very slow. In pathological conditions, the number of oxidation products increases rapidly, they negatively affect some enzymatic processes, the integrity and functioning of cell membranes, cell metabolism and the division process, leading to a vicious cycle [41].

The problem of infections in obstetrics, despite numerous and many years of research, remains extremely relevant. This is due to the high degree of disease in pregnant women, women in labor and newborns and a high proportion of bacterial and viral diseases in cases of maternal morbidity, mortality and adverse perinatal outcomes [16,17,18]. In modern obstetrics around the world, there is a tendency to increase the frequency of surgical interventions in childbirth by 10-15%, as a result of which such infectious complications as endometritis, primary infections, etc. increase, the fact that the immunological rate decreases in pregnant women also reactivity, which accelerate the development of purulent-inflammatory diseases during childbirth and the postpartum period. There are also epidemiological problems associated with a high risk of newborn disease s in maternity wards and the frequent presence of chronic children's diseases after perinatal infection, leading to significant economic costs [63]. The frequency of intrauterine infections in full-term pregnancies ranges from 0.5 to 10.5%, with premature births, especially with the

discharge of water, reaches 25%. On the other hand, the presence of foci of infection is not only a reservoir of microbes, but also a source of sensitization of the woman's body and the fetus. According to numerous literary studies, it was found that the dissemination of microorganisms from the vagina in pregnant women varies in the range of 8.5–20% [64].

Currently, according to most authors, a feature of infectious and inflammatory diseases of the lower floor of the genital tract is a polymicrobial etiology, i.e. a mixed infection prevails, which leads to their longer and more severe course, the frequent occurrence of relapses and various complications that cause reproductive disorders . In the chronic course of the disease in the case of a mixed infection, it is much more difficult to cure than with monoinfection. Therefore, the diagnosis of all infections of the genital tract of women is relevant. This approach allows for adequate debridement and to prevent the spread of damage to the upper genital tract, which involves the treatment and prevention of PID and other complications leading to functional and structural damage to the pelvic organs.

There are national standards for the treatment of vaginal infections aimed at eliminating certain pathogens, and the polymicrobial cause of cervico-vaginal infections is not taken into account. For example, with bacterial vaginosis, metronidazole is used as an alternative to clindamycin, with candidal vulvovaginitis - antifungal drugs. But in these standards there is no treatment regimen for mixed infections, and there is no use of antiseptics in the treatment of this pathology.

The goal of treatment, for example, bacterial vaginosis and vulvovaginal candidiasis, is to eliminate inflammatory changes in the vagina, whose task was to eliminate the pathogen and restore normal microflora. According to some authors, an important stage of treatment is maintenance therapy and rehabilitation with weekly vaginal baths with chamomile, sage, calendula, chlorophyllipt extract, the appointment of estrogen in the first phase of the menstrual cycle, vitamin preparations, as well as for the rehabilitation and prevention of re-infection of the vagus and neck the uterus, you can use the hydrophilic washing oil GI-Intima, which contains almond and soybean oils, extracts of medicinal plants and essential oils. This oil does not contain mineral oils and does not undergo chemical preservation, it allows you to save the symbiotic microflora of the vagina. When using hydrophilic oil, side effects (mucosal irritation, itching) were not observed; on the contrary, pregnant women felt comfortable. When conducting tests from the vaginal mucosa before the use of this oil, inflammatory infiltrate was observed in local form in 60% and diffuse form in 40% of the examined. After using aromatherapy drugs, the nature of the smears was the same, but mixed types of smears predominated. In inflammatory smears, the number of neutrophils decreased in 90% of cases, diffuse lymphocytic infiltration remained, and the number of macrophages increased. That is, clinical and laboratory improvement was observed.

There are different opinions regarding approaches to the treatment of cervicovaginal infections in pregnant women [65]. So, in the treatment of GI in pregnant women A. Novakov Mikić indicate the effectiveness of okgenidine dihydrochloride / phenoxyethanol [66]. W. Mendling et al. [68] dequalinium chloride (Fluomizin), which has a wide spectrum of action, was used to treat mixed vaginal infections . According to Radzinsky [69], in the treatment of vaginal infections, the only available correction method is to act on pathogenic microorganisms with antimicrobial agents and achieve restoration of the vaginal physiological vaginal microbiocenosis. Many currently used treatment regimens for CVI are focused on eliminating clinical symptoms, while the possibility of autoregulation of disturbed metabolic processes in

the mother's body is not taken into account, the risk of antenatal damage to the fetus caused by medications is not taken into account [70].

The study of plants as an alternative to other forms of drugs has recently attracted great attention of researchers. Since, according to WHO, the use of medicinal plants as sources for a wide range of drugs could be of great benefit to the population [3,4]. In addition, silver nanoparticles, antibodies, and photodynamic inactivation were also used with good results, taking into account the formation of biofilms.

The search for drugs continues, taking into account the formation of biofilms by microorganisms, which lead to treatment failure. In the treatment of the threat of abortion against the background of cervicovaginal infections, treatment regimens have been proposed that include pathogenetic and symptomatic therapy [71]. Moreover, according to some authors, the removal of toxic metabolites and autoantibodies using efferent therapy is much more effective than drug therapy. Any antibiotic poses a potential risk to the fetus, since no one has tested their embryotoxic or teratogenic effects in pregnant women [72]. Long-term antibiotic therapy of chlamydia often leads to severe intestinal dysbiosis and activation of opportunistic flora [73]. This contributes to an even greater increase in endotoxemia, while the immune response is inhibited, the activity of cellular and humoral factors of nonspecific anti-infection protection of the body decreases, the barrier function of the reticuloendothelial system is disrupted, which leads to a protracted course of the inflammatory process [74].

Recently, increasing drug resistance of microorganisms forces the use of shock doses of antibiotics, while allergization occurs more quickly, dysbiosis, generalized forms of candidiasis develop, and hepato-nephro-ototoxic effects are manifested. A 50% increase in the level of free endotoxin is also detected, which is ensured by the destruction of bacterial membranes. In addition, antibiotics are effective only with intact immune responses; with immunosuppression, they do not bring significant success.

The most pathogenetically substantiated approach to the treatment of chronioinfections is efferent therapy aimed at eliminating pathological products. The positive results of the use of plasmapheresis in combination with laser irradiation of blood in the treatment of genital herpes and cytomegalovirus infection have been reported by a number of authors [75]. When using combinations of plasmapheresis courses with blood ozonation, the frequency of complications decreased, however, these methods require appropriate equipment and equipment.

At the same time, one of the notable vectors of medicine of the 21st century is the demedicalization of the treatment process, avoiding polypharmacy in general and the prevalence of synthetic substances in the therapeutic arsenals of doctors of any specialties. Increasingly, attempts are being made to get away from the use of antibiotics, at least in cases of a mild form of lower urinary tract infection.

About 40% of all medicines of state pharmacopeias of different countries are herbal medicines. The advantages of herbal preparations are that when they are used, the whole body of biologically active compounds created on their basis enters the human body, the preparations have a milder effect on the body, are better tolerated, and cause allergic reactions much less often. According to V.E. Radzinsky, almost all complications of pregnancy are accompanied by hypoxic conditions of the body, which makes the prophylactic and therapeutic use of medicinal plants with antioxidant, antihypoxant effect advisable [76]. Herbal preparations such as blueberries, licorice, green tea, echinacea, cranberries, rosehips and others have an antioxidant effect [11].

However, at present, there are various approaches to the treatment of bacterial vaginosis and colpitis. Studies have shown that the maximum antifungal effect is exerted by garlic preparations, diamides spreading. Herbal medicines that normalize microbiocenosis are divided into the following groups: phytoantibiotics (e.g. garlic, diamine spreading, etc.), antimycotic drugs (lapacho, raipruft), interferon inductors (uncaria fibrous, echinacea), eubiotics (microbiological concentrates on fruit). To restore the normal microbiocenosis of the gastrointestinal and genital tract, the microbiological concentrates based on fructooliosaccharide base “Floraldofilus” are used [77]. The same properties have a medicinal plant anise ordinary. In foreign literature there are works on its use in medicine. Fruits contain fatty (from 8 to 30%) and essential oil (up to 6%) [7,14,15]. Essential oil contains anethole (80-90%), methylchavicol (10%), anisic aldehyde, anisic ketone and anisic acid [35-40]. Anise ordinary has anti-inflammatory, antispasmodic and expectorant properties, have a bactericidal effect [15]. It is known that anise essential oils are non-toxic, do not have side effects, stimulate self-regulation in the body, do not cause addiction to them, the antiseptic activity of essential oils does not decrease over time, and microorganisms do not develop resistance. The antibiotic, antiviral effect of essential oils is due to the destruction of the cytoplasmic membrane and a decrease in the activity of aerobic respiration, which leads to a decrease in the energy release necessary for the synthesis of organic compounds in microorganisms [8].

CONCLUSIONS

In recent years, due to changes in the epidemiology of infectious and inflammatory diseases of the genital tract (polymicrobial infections), and the resistance of their pathogens to antimicrobials, the need has arisen for the development of new approaches and recommendations for the prevention and treatment of cervicovaginal infections [78].

Based on the foregoing, the need has ripened for the introduction of new therapeutic approaches with the inclusion of available methods for correcting the body's EI based on the arsenals of the Republic of Uzbekistan, which would reduce the frequency of pregnancy complications, reduce perinatal losses, and contribute to the full management of pregnant women and preservation of their reproductive functions. It is necessary to search for affordable and cheap means of combating endotoxemia, in connection with which the use of non-pharmacological methods of treatment, including herbal medicine, is of interest [23,25,27,34,79,80]. It is obvious that the inclusion of medicinal plants in the complex of therapeutic measures, leading to inhibition of LPO reactions, an increase in antioxidant status and a decrease in the plasma of the hydrophilic components of endotoxemia, as well as the local use of essential oils in pregnant women is a promising direction.

REFERENCES:

[1]. Abu Ali ibn Sino. Canon of medical science // Transl. With arab. Yu.N. Zavadovsky, S. Mirzaev / V.3.- Tashkent: Yozuvchi, 1995 .- P. 375, 456, 523, 599.
[2]. Festi D. Encyclopedia of aromatherapy: for the health of the whole family. - Moscow: Publishing House "E", 2017. - 544 p.
[3]. Festy D. Ma bible des huiles essentielles. - Éditions Leduc. s, 2018.
[4]. WHO strategy in the field of traditional medicine, 2014-2023 // WHO publication. - 2013.
[5]. WHO monographs on medicinal plants widely used in the Newly Independent States (CIS), 2010

[6]. Alekseeva A. V., Mazur L. I., Kurkin V. A. Melissa officinalis: prospects for use in pediatric practice // Pediatrics. Magazine them. GN Speransky. - 2011. - V. 90. - No. 1. - P. 90-95.
[7]. Pashtetsky V. S., Nevrytaya N. V. Use of essential oils in medicine, aromatherapy, veterinary medicine and crop production (review) // Taurian Bulletin of Agricultural Science. - 2018. - V. 1. - No. 13. - P. 16-38.
[8]. Shutova S. V. Aromatherapy: physiological effects and possible mechanisms (literature review) // Bulletin of Russian universities. Mathematics. - 2013. - V. 18. - No. 4-1.
[9]. Buckle J. Clinical Aromatherapy-E-Book: Essential Oils in Practice. - Elsevier Health Sciences, 2014.
[10]. Bobrik Yu.V., Timofeev I.Yu., Kulinchenko A.V., Babynin A.S., Kozulya S.V. Aromatherapy, aerophytotherapy: development prospects and possibilities for use in the rehabilitation of patients, disease prevention // Tauride Medical and Biological Bulletin - 2014. V. 17. No. 2 (66). P. 17-21. (69)
[11]. Weiss RF, Fintelmann F. Herbal medicine. Manual: Per. with him. M .: Medicine, 2004.
[12]. Kartasheva O. L., Tkachev A. V., Utkina T. M., Potekhina L. P. The effect of wormwood essential oils on the growth of microorganisms and their formation of biofilms // Bulletin of the Orenburg Scientific Center of the Ural Branch of the Russian Academy of Sciences. 2012. No. 3. P. 2–10.
[13]. Raikova S.V., Kolikov A.G., Shub G.M., Durnova N.A., Shapoval O.G., Rakhmetova A.Yu. Antimicrobial activity of peppermint essential oil (Mentha piperita L.) // Saratov Journal of Medical Scientific Research. 2011. Vol. 7. No. 4. P. 787–790.
[14]. Tkachenko K.G. Essential oil plants and essential oils: achievements and prospects, modern trends in the study and application // Bulletin of the Udmurt University. 2011. Issue. 1. P. 88–99.
[15]. Chumakova V.V., Popova O.I. Anise lofant (Agastache foeniculum L.) - a promising source of drugs // Pharmacy and Pharmacology. 2013. No. 1. P. 39–43.
[16]. Inatovsky A.V., Sokolovsky E.V. New possibilities for the treatment of vulvar and vaginal pathology // Journal of Obstetrics and Female Diseases - 2009 - No. 1, Volume LVIII, Issue 57-59.
[17]. Kira EF, Tsvelev Yu. V. Terminology and classification of bacterial infectious diseases of the female genital organs // Tomsk State University Journal. Ross Association of Obstetricians Gynecologists. - 1998. - No. 2. - P.24–26.
[18]. Kisina V. I., Zabirov K. I. Urogenital infections in women. - M.: MIA, 2005 .- 12 p.
[19]. European STD Guidelines // International Journal of STD AIDS. - 2001 .-- Vol.12, suppl. 3. - 107 p.
[20]. Rabbimova G.T. Efficiency in phytotherapy endogenous intoxication syndrome in pregnant women with infectious risk // European Science Review. - Austria, 2016.– No. 7-8.– P. 113-115
[21]. Rabbimova G.T., Muhamadiev N.K. Evaluation of Microflora Features the Method of Gas-Liquid Chromatography in Pregnant Women with Infectious Risk // International Journal of Medical and Health Research. - 2016. - V. 2. - N 4. - P. 18-20
[22]. Negmadzhanov B.B., Rabbimova G.T., Kurbaniyazova M.Z. The effect of combination therapy on the state of vaginal microbiocenosis in pregnant women with genital infection // Infection, immunity and pharmacology. - Tashkent, 2017. - Special issue. Part 2 - P. 111-117.
[23]. Rabbimova G.T. The effectiveness of phyto-probiotic therapy in treating the threat of termination of pregnancy of infectious origin // News of Dermatovenereology and Reproductive Health. - Tashkent, 2017.– N 3-4 (II) .– P. 32-33.
[24]. Rabbimova G.T., Muhamadiev N.K. State kallikrein-kinine system in pregnant women groups infectious risk // International Journal of Medicine and Health Research. - India, 2015.– Vol. 1

(Issue 1). - P. 1-3.
[25]. Rabbimova G.T., Negmadzhanov B.B. The effectiveness of herbal medicine in pregnant women with urogenital infection // Bulletin of a doctor. - Samarkand, 2015. - No. 3. - P. 45-47
[26]. Rabbimova G.T., Negmadzhanov B. B. Evaluation of the effectiveness of treatment and prevention of complications in pregnant women with vaginal infection // The Journal of scientific articles "Health & Education Millennium". - Moscow, 2017 .- Vol. 19. No. 1. - P. 48-50.
[27]. Rabbimova G.T. The effectiveness of herbal medicine for endogenous intoxication syndrome in pregnant women with urogenital infection // Materials of the interregional scientific-practical conference with international participation // Scientific and practical journal "Consilium" - Izhevsk, 2016. - No. 2. - P. 22-25.
[28]. Rabbimova G.T. Prognostic value of endogenous intoxication parameters in complicated pregnancy // Materials of the 7th International Pirogov Conference of Students and Young Scientists // Bulletin of the Russian State University. - Special. issue - Moscow, 2012. - No. 1. - P. 68.
[29]. Rabbimova G.T. State of endogenous intoxication in threatening preterm birth // Actual problems of reproductive health: Conference proceedings // Problems of Biology and Medicine. - Samarkand, 2013.– No. 4 (75). - P. 86-87.
[30]. Rabbimova G.T. The diagnostic value of the activity of enzymes of the kallecrein-kinin system in pregnant women with an infectious risk // Actual issues of clinical, laboratory and functional diagnostics with clinical pathophysiology: Conference proceedings // Problems of Biology and Medicine. - Samarkand, 2015.-№4 (85). - P. 117-118.
[31]. Rabbimova G.T., Muhamadiev N.A. Efficiency of herbal medicine in pregnant women with urogenital infection // 10th Anniversary International Congress on Reproductive Medicine: Materials. - Moscow, 2016 .- P. 75-76.
[32]. Rabbimova G.T. Indicators of endogenous intoxication in pregnant women with an infectious risk // 10th Anniversary International Congress on Reproductive Medicine: Materials. - Moscow, 2016. - P. 117-118.
[33]. Sayfieva M.S., Rabbimova G.T., Mukhamadiev N.K. Determination of microorganism markers by gas-liquid chromatography // The role of chemistry in the economic development of Uzbekistan: Materials of the Republican scientific-practical conference. - Samarkand, 2018 .- P. 80-82.
[34]. Sayfieva M., Rabbimova G.T., Muhamadiev N.Q. Estimation of use efficiency of essential oil of anise in treatment of genital infections in pregnant women // International Journal of Research in Medical and Basic Sciences Vol 5 Issue 6, June 2019. – P. 15-21.
[35]. Mukhamadiev N.K., Mukhamadiev A.N., Khalilov K.F., Saidov A.Sh. Isolation of essential oils from essential oil plants and the study of their chemical composition (monograph). - Tashkent .: Chulpon NMIU, 2017 .-- 160 p.
[36]. Muhamadiev A.N., Nayimova B.K., Muxamadiev N.K. Optimization of the technological process for the isolation of essential oil from Pimpinella anisum L. // Bulletin of Samarkand University. - 2016 .- N 1 (95). - P. 131-134.
[37]. Muhamadiev A.N., Nayimova B.K., Muhamadiyev N.Q. Optimization of the conditions for the separation of essential oil from Pimpinella Anisum L. using multifactor design of the experiment // Bulletin of Samarkand University. - 2017 .- N 3 (103/2). - P. 77-79.
[38]. Muhamadiev A.N., Khalilov K.F., Nayimova B.K., Muhamadiev N.Q. GC-MS Investigation of Composition of Essential Oils, Extracted from Mentha Piperita and Pelargonium Roseum // SSRG International Journal of Applied Chemistry (SSRG-IJAC) –2019. - V. 6. - N 2. - P. 31-34.
[39]. Muhamadiev A.N., Fazlieva N.T., Muxamadiev N.K. The study of the chemical composition of

the essential oil extracted from Pimpinella Anisum L. by GC-MS // Bulletin of Samarkand University. - 2014 .- N 1 (83). - P. 83-87.
[40]. Muhamadiev N.Q., Muhamadiev A.N., Sayitkulov Sh.M., Fazlieva N.T. Pimpinella Anisum L. " cultivated in Uzbekistan // XV International Scientific Conference "High-Tech in Chemical Engineering - 2014", Zvenigorod September 22–26, 2014. - Moscow, 2014. - P. 159.
[41]. Sidorenko S.V. Clinical significance of resistance of microorganisms to antimicrobial drugs // Russian medical news. 1998.No. 1. P. 28–34.
[42]. Alinkina E.S., Misharina T.A., Fatkullina L.D. Antiradical properties of essential oils of oregano, thyme and chaber // Applied biochemistry and microbiology. 2013. Vol. 49. No. 1. P. 82–87.
[43]. Ozkan A., Erdogan A. Comparative evaluation of antioxidant and anticancer activity of essential oil from Origanum onites (Lamiaceae) and its two major phenolic components // Turkey journal of Biology. 2011.No. 35. P. 735–742.
[44]. Manohar V., Ingram S., Gray J., Talpur N.A., Echard B.W., Bagchi D., Preuss H.G. Antifungal activities of origanum oil against Candida albicans // Molecular and Cellular biochemistry. 2001.No. 228. P. 111–117.
[45]. Terenina M. B., Misharina T. A., Krikunova N. I., Alinkina E. S., Misharina T. A., Fatkulina L. D. Essential oil of oregano as an inhibitor of oxidation of higher fatty acids // Applied Biochemistry and Microbiology. 2011. Vol. 47. No. 4. P. 490–494.
[46]. Burlakova E.B., Vorobyeva A.K., Misharina T.A. The effect of oregano essential oil on the aging of mice aging // Izvestiya Vuzov. Series "Applied chemistry and biotechnology". 2012.No. 2 (3). P. 92–95.
[47]. Samusenko A.L. Comparative evaluation of the antioxidant activity of essential oils of spicy aromatic plants by the method of capillary gas chromatography // Chemistry of plant raw materials. 2010. No. 3. P. 107–113.
[48]. Strukova E.G., Efremov A.A., Gontova A.A., Sokolova E.S. Effect of essential oils of the Siberian region on conditionally pathogenic microorganisms // Chemistry of plant raw materials. 2009.No. 4. P. 79–82.
[49]. Khaldun A.O. Antibacterial effect of essential oils of some plants // Journal of Microbiology, Epidemiology and Immunobiology. 2006. No. 3. P. 92–93.
[50]. Velikorodov A.V., Kovalev V.B., Tyrkov A.T., Degtyarev O.V. The study of the chemical composition and antifungal activity of essential oil Lophantus anisatus Benth. // Chemistry of plant raw materials. 2010. No. 2. P. 143–146.
[51]. Naumenko E.N., Zhilyakova E.T., Novikov O.O. Search for alternative antimicrobial agents // Bulletin of new medical technologies. 2009. Vol. XVI. No. 1. P. 187–188.
[52]. Kudlay D.G., Chubukov V.F., Oganesyan M.G. Genetics of drug resistance of bacteria. Moscow: Medicine, 1972. 212 p.
[53]. Markelova N.N., Semenova E.F., Shpichka A.I., Zhuchenko E.V. Effect of essential oils on microorganisms of different taxonomic affiliation in comparison with modern antibiotics. Communication II. The effect of pink essential oil and antibiotic substances on some Gram-negative bacteria // Natural Sciences. Biology. 2014.No. 3 (7). P. 39–47.
[54]. Karasavidi A.O. Some kinds of essential oil in medical practice // Bulletin of Voronezh State University. Series: Chemistry. Biology. Pharmacy 2005.No. 1. P. 205–211.
[55]. Zuzuk B.M., Kutsik R.V. Melissa officinalis (Melissa officinalis L.): analytical review. [Electronic recource]. Access point: http://www.provisor.co.ua/2008/2 (reference's date 05/26/2017).
[56]. Grebennikova O.A., Paliy A.E., L.A. Logvinenko Biologically active substances of lemon balm // Scientific Notes of Taurida V.I. Vernadsky National University. Series "Biology, Chemistry".

2013. Vol. 26 (65). No. 1. P. 43–50.
[57]. Alekseeva A.V., L.I. Mazur, Kurkin V.A. The perspectives of the using of Melissa officinalis in pediatry // Medical almanac. 2009. Vol. 9.No. 4. P. 177–181.
[58]. Alekseeva A.V. The herb of sweet offlcinalis - prospective sourse of substitude of imported neurotropic medicine // Medical almanac. 2011.No. 1 (14). P. 233–237.
[59]. Loseva A.V. Antimicrobial activity of essential oils // Biotechnology. A look into the future. Materials of the 3rd International Scientific Internet Conference. Kazan, 2014. Vol. 1. P. 145–148.
[60]. Kartasheva O.L., Tkachev A.V., Utkina T.M., Potehina L.P. The influence of wormwood essential oils on the growth of microorganisms and the formation of biofilms by them // Bulletin of the Orenburg Scientific Center, Ural Branch of the Russian Academy of Sciences. 2012.No. 3. P. 2–10.
[61]. Konovalov D.A., Khamilonov A.A. Biologically active compounds of Artemisia annua essential oil // Pharmacy and pharmacology. 2016.Vol. 4.No. 4. P. 4–33.
[62]. Zhuchenko E.V., Semenova E.F., Markelova N.N., Shpichka A.I., Knyaz'kova A.A. Influence of essential oils on microorganisms belonging to different taxons in comparison with modern antibiotics. Report III. Effects of essential oils of lavender, rosewoodtree, eucalyptus, fir on some gram-negative bacteria // University proceedings. Volga region natural sciences. 2015.No. nineteen). P. 30–41.
[63]. Kulakov V. I., Vikhlyaeva E. M. Infectious pathology of the female reproductive system // Obstetrics and Gynecology. - 1995. - V. 4. - P. 3-6.
[64]. Rudenko A. V., Bavina E. N., Romashchenko O. V. Analysis of the reasons for the insufficient effectiveness of the treatment of inflammatory diseases of the urogenital system in women // Questions of medical chemistry. - 1991. - P. 37. - No. 5. - P. 86-89.
[65]. Dobrokhotova Yu. E. and others. Modern aspects of the treatment of vaginal infections during gestation // Gynecology. - 2016. - V. 18. - No. 3.- P. 9-15.
[66]. Nikolic A. et al. Ceruloplasmin and antioxidative enzymes in pre-eclampsia // The Journal of Maternal-Fetal & Neonatal Medicine. - 2016. - V. 29. - No. 18. - P. 2987-2993.
[67]. Nikolaev S.V., Konopeltsev I.G., Sapozhnikov A.F. Efficiency of the use of ozonated emulsion in the prevention of postpartum endometritis in first-calf cows. - 2017 .- P. 124-129.
[68]. Mendling W. et al. Use of locally delivered dequalinium chloride in the treatment of vaginal infections: a review // Archives of gynecology and obstetrics. - 2016. - V. 293. - No. 3 .- P. 469-484.
[69]. Radzinsky V. E. and others. The experience of using the drug Polygynax in the treatment of vulvovaginitis caused by aerobic and mixed microflora // Women's Health. - 2016. - No. 10. - P. 45-48.
[70]. Zaplatnikov A. L. et al. Intrauterine infection: Diagnosis, treatment, prevention // Emergency medicine. - 2013. - No. 1.48. - P. 25-33.
[71]. Narimanova G.V. et al. Comparative evaluation of cytokine production during physiological and complicated TORCH infections of pregnancy // Issues of Gynecology, Obstetrics and Perinatology. - 2019.- V. 18. - No. 5. - P. 61-65.
[72]. Ostrovskaya A. V., Sher S. A. Problems of drug safety of the fetus // Pediatric Pharmacology. - 2010. - V. 7. - No. 1.
[73]. Ermanbetov A. M. Sexually transmitted infections // Health of Kyrgyzstan. - 2012. - No. 1. - P. 9-12.
[74]. Hofmeyr G. J., Gülmezoglu A. M., Pileggi C. Vaginal misoprostol for cervical ripening and induction of labor // Cochrane Database of Systematic Reviews. - 2010. - No. 10.

[75]. Chernova N. I. The state of systemic immunity in women of reproductive age with a cytomegalovirus infection of the urogenital tract // Russian Bulletin of the Obstetrician-Gynecologist. - 2014. - V. 14. - No. 2. - P. 23-28.
[76]. Radzinsky V. E., Simonovskaya H. Yu. Phytotherapy in obstetrics and gynecology. The new century is a new ideology. The concept of phytoniring as a stage in the development of herbal medicine // Information Bulletin.-Ed. - 2015.
[77]. Radzinsky V. E. Modern phytotherapy technologies in obstetrics and perinatology // Journal of Obstetrics and Women's Diseases. - 2003. - V. 52. - No. 1. - P.83-88.
[78]. Dolgushina V. F. et al. Correction of the vaginal biocenosis during cervicovaginal infection during pregnancy // Bulletin of modern clinical medicine. - 2019.- V. 12. - No. 2. - P. 33-36.
[79]. Rabbimova G. T. The effectiveness of herbal medicine for endogenous intoxication syndrome in pregnant women with urogenital infection // Family Health — the future of Russia. - 2016 .- P. 22-24.
[80]. Rabbimova G. T., Negmadzhanov B. B. Evaluation of the effectiveness of treatment and prevention of complications in pregnant women with vaginal infection // Medical and pharmaceutical journal "Pulse". - 2017. - V. 19. - No. 1. - P. 48-50.s