UDC: 618.2/.3-08-084:615.322(048.8) DOI: 10.24061/2413-4260.XIII.3.49.2023.15

O. I. Voloshyn, L. O. Voloshina, O. I. Dogolich, Bachuk-Ponych H.V, Okipnyak I. V.

Bukovinian State Medical University (Chernivtsi, Ukraine)

Summary

Increase in the morbidity of women during pregnancy and in the postnatal period, the known limitations using of modern synthetic drugs cause the search for ways of medical assistance, in particular use of phytotherapy.

Aim: highlight the world and own experience of using phytotherapeutic agents during pregnancy and in the postnatal period, indications, limitations and threats.

Materials and methods: used available monographic and journal sources in the electronic systems MED Line, EMBASE, Scopus, Web of Science using methods of analysis, comparison and generalization.

Results. It has been established that scientists from the world's leading scientific centers state a growing interest in using of phytotherapy methods as one of the important approaches of medical pluralism in the pathology of pregnancy and in the postnatal period. depending on the level of economic development and the state of the medical industry of the state and the commonality and differences of the principles and forms of providing phytotherapeutic assistance. Commonality is that even ancient and simple methods and means of phytotherapy in this contingent of patients, along with modern ones in developed countries, are, albeit to varying degrees, effective and safe.

In countries with a low socio-ecological level, simple methods according to ancient traditions are still forced to be used, mainly as a self-initiative or on the advice of friends, family, rarely – on the recommendations of specialists without clear recommendations regarding the duration and remote consequences of application, which is unfavorable.

There are some difference between of using phytotherapy in the developed countries of Europe and USA is that various means, forms of plant factors are mainly manufactured in accordance with modern requirements of the Ministry of Health, are recommended on the basis of evidence-based medicine by properly trained obstetrics and gynecology personnel, modern sources of information are available for the improvement of medical personnel, training of pregnant women. The clear effectiveness and side effects of herbal preparations, their impact on the body of the mother, fetus and lactation processes are monitored. Various trainings and forms of improving using of herbal medicines are carried out and need for close contacts of obstetrician-gynecologists with specialists in complementary and alternative medicine.

Conclusions: Modern scientific studies testify to the effectiveness, safety and necessity of using herbal preparations in the pathology of pregnancy and the postnatal period as one of the important components of medical pluralism. The specifics of their use must comply with the requirements of the DMR and be recommended on the basis of evidence-based medicine. **Key words:** pregnancy, postnatal period, phytotherapy, application, safety, training.

Relevance

In recent decades, a decline in health has been observed worldwide, especially in developed countries, due to various socio-economic, environmental and other factors [53, 54]. Leading scientists in the field of nutritional biochemistry, such as K. Campbell, have also emphasized the significant role of modern foods in the deterioration of the health of nations, attributing this to the use of herbicides, pesticides, hormone-like substances, antibiotics, and other modern technologies in agriculture, livestock, poultry, and food industries [52]. Campbell notes that such practices in these industries are necessary because otherwise it would be impossible to solve the problem of feeding the world's growing population. However, these foods contribute to numerous metabolic, neuroendocrine, regulatory, and immune dysfunctions from early childhood, including the reproductive period of human life. Therefore, there is a prospect of further deterioration of health and increase in morbidity of the population. With regard to women's health, obesity, infertility, pregnancy and postnatal pathologies, and hypogalacty are major challenges [6].

Management of pregnancy and the postpartum period is further complicated by chronic diseases of internal organs, which may have developed at various intervals before pregnancy. The most common are renal and genitourinary, digestive, respiratory, cardiovascular, neurological, endocrine, secondary immunodeficiency and anemia diseases, the frequency of which is increasing [41, 43]. Frequently, exacerbations of these conditions occur during pregnancy, requiring appropriate therapeutic interventions based on modern evidence-based medical approaches dominated by synthetic chemotherapeutic drugs. However, the global obstetric-gynecological and pharmaceutical communities have expressed serious concerns about the use of synthetic drugs during pregnancy [3, 5, 8].

We should also mention the severe challenges that humanity, including the obstetrics-gynecology community, has faced, such as avian flu, swine flu, and COVID-19.

In such cases, ranging from routine situations in the gestational and postnatal periods to various complications, including the acute infections mentioned above, how should we proceed? What do we know historically? What approaches have been adopted by medical communities in different countries with low, medium and high levels of medical care? It turns out that both in the past and in the present, regardless of the level of economic development of a country or its medical field, considerable attention is paid to the accumulated knowledge of traditional medicine, with

different degrees of refinement, methodological approaches, forms and duration of treatment, as well as ways of administering substances to a woman's body, depending on the particular complications of the corresponding period of pregnancy, and more. In the last decades, scientists from all over the world have been working on this topic, which has resulted in numerous original articles, analytical reviews, and discussions on the subject and has highlighted the need for further research. The authors of this publication also have their own experience in this field.

The aim of this work is to analyze the literature and highlight the features of phytotherapeutic agents' use during pregnancy and the postpartum period, indications, limitations, threats, and prospects for further research.

Materials and methods. Available monographs, journal articles from electronic systems such as MEDLINE, EMBASE, Cochrane Library, Scopus, Web of Science were used, applying methods of analysis, comparison and generalization. The most important and qualitative sources that form the basis of this work have been considered.

Results. According to the analyzed sources, despite the high attention of scientists, clinicians, and pharmacists in different countries, there is medical pluralism and consensus on the possibility and necessity of using phytotherapeutic agents and modern synthetic drugs according to nosological conditions and medical-pharmaceutical precautions for the corresponding drug [22, 23, 47]. The use of complementary medicine (CM), including phytotherapy, during pregnancy, lactation and the postnatal period is increasing worldwide. In a multinational study conducted in 23 countries by Kennedy D.A. et al [28], the most common CM methods were found in Russia (69.0%), Australia (43.8%) and Poland (49.8%). However, in Spain and the United States, only 14.2% and 13% of women, respectively, use CM methods. The use of CM methods is also low in countries with weak economies, such as Kenya [20, 22]. In the majority of countries worldwide, herbal remedies are classified as over-the-counter drugs. One of the main reasons for the low use of CM in these countries is considered to be the lack of awareness among women about the efficacy and risks of using CM methods during pregnancy and lactation [27], which is related to both the lack of relevant literature for patients and the lack of knowledge about this issue among obstetricians. The most common forms of application in all countries are teas, infusions, extracts, macerates, aqueous-alcoholic tinctures, powders, tablets, capsules, and topically-herbal compresses, poultices, creams, ointments, and essential oil extracts (for aromatherapy) [16, 39].

In one of the most recent multinational studies by Canadian researchers Kennedy D. A. et al [28], conducted in 18 European countries, North America, and Australia through a special questionnaire via social Internet and national websites, it was found that pregnant women and mothers in the postpartum period are currently more likely to use herbal remedies on their own initiative, based on advice from friends or family, the Internet, mass media, or phytopharmacy staff, than on recommendations from obstetrics-gynecology, therapeutic staff, or pharmacists. The most commonly used herbs include valerian, hops, sage, echinacea, yarrow, dandelion, ginkgo, lemon, mint, and cranberry [6, 8, 10]. However, there is a lack of information on the self-initiated use of plants that are contraindicated during pregnancy, such as lingonberry (Vaccinium vitis idea), lovage (Levisticum officinale), or some plants for which there is no information on their use during pregnancy, such as grapefruit (Citrus spp), sea buckthorn (Hippophae rhamnoides), pink rhodiola (Rhodiola rosea), and heather (Calluna vulgaris). However, in such a survey, it is impossible to determine which parts of the plants were used, the type of extraction, the doses, the duration of use, and so on. The most fundamental approach to studying this problem was taken by Australian pharmaceutical scientists Barnes L.A. et al. [7], who studied the global experience through the prism of economic levels, culture, professional education, sources of herbal remedies, their forms of application, including the ability of countries to manufacture them according to international GMP standards, as well as the safety of their use during pregnancy and postpartum period, lactation, the possibility and conditions of wider implementation in practice, the duration of use of herbal remedies depending on various pathological manifestations, the age of patients, their financial and educational constraints, national traditions, family care, etc. In this paper, the authors note that in developed countries, pregnant and postpartum women primarily use herbal remedies produced according to modern GMP requirements when needed, whereas in the poorest countries, local raw materials and homemade forms of preparation (teas, infusions, decoctions) traditionally dominate, and it is difficult to properly assess their efficacy, safety, and level of information. Based on the best achievements in developed countries in the successful use of CAM methods as an important component of comprehensive medical care, the authors see the need for education of pregnant women, lactating mothers and those with postnatal pathologies, as well as obstetric-gynecological personnel, the need for professional interaction with CAM specialists, and education of pregnant women and those recovering from childbirth in the prevention of possible complications. Researchers see future success in this direction by strengthening the educational and informational component for medical personnel and patients through modern gadget technologies, which have gained practical implementation [7, 9, 21, 28, 31, 37].

However, in this work, although profound, the authors, as pharmacists, provided a somewhat narrowed view without emphasizing specific pathological manifestations of pregnancy and the postnatal period or specific medicinal plants. In this context, valuable information is provided by their British colleagues V. M. Balboltin et al [6], who pay special attention to the side effects and interactions during different stages of pregnancy regarding the most commonly used herbal remedies, including chamomile, echinacea, ginger, cranberry, raspberry, aloe, licorice, almond oil, and fenugreek. The warnings about possible side effects of chamomile on fetal development (premature labor, low birth weight, small stature, chest deformity), echinacea (hypoplasia of the left ventricle, congenital diaphragmatic hernia, hydronephrosis, syndactyly, laryngotracheomalacia, hypospadias), syndactyly, laryngotracheomalacia, hypospadias), ginger

(Verbena officinalis), Senna (Senna alexandrina), Sea Buckthorn (Rhamnus frangula), nettle (Urtica dioica), juniper (Juniperus communis), lavender (Lavandula angustifolia), anise (Pimpinella anisum), and yellow gentian (Gentiana lutea) [8, 33].

Plants containing alkaloids have embryotoxic effects during pregnancy, such as barberry (Berberis vulgaris), celandine (Chelidonium majus), ephedra (Ephedra sp.), and Canadian goldenseal (Hydrastis canadensis). Certain precautions should be taken with plants containing bitter constituents and essential oils that may also cause mild nausea during pregnancy, such as aloe (Aloe vera), red pepper tincture (Capsicum annuum), comfrey (Symphytum officinale), mistletoe (Viscum album), cinnamon (Cinnamomum ceylanicum), and pasque flower (Pulsatilla sp.) [8, 23].

Some medicinal plants are widely used as spices in different cultures, but they should not be used in large amounts or by pregnant women. These include basil, parsley, oregano, rosemary, marjoram, radish, saffron, and greens. Occasional use of tansy, thyme, hyssop, and plantain is possible.

Pregnant patients can safely use herbal remedies in generally recommended doses, such as chamomile (Chamomilla recutita), mint (Mentha piperita), raspberry branches (Rubus idaeus), ginger root (Zingiber officinale), cranberry (Oxycoccus palustris), blueberry (Vaccinium uliginosum), echinacea (Echinacea purpurea), rose hip (Rosa canina), blueberry (Vaccinium myrtillus), and alfalfa (Medicago sativa) flowers [8, 10, 50].

In recent years, extensive research has been conducted on the specific use of ginger, turmeric, raspberry, stinging nettle, and plants with antioxidant and immunomodulatory activity in pregnant women and in the postnatal period [11, 14, 30, 31, 40, 42, 45].

However, phytotherapy may have several side effects [32]:

- Gastrointestinal disturbances (loose stools, diarrhea, abdominal discomfort, gastroesophageal reflux, nausea).

- Preterm labor if licorice products are used in the second trimester.

- Preterm labor with excessive consumption of chamomile tea and licorice products.

- Maternal hypoglycemia with excessive consumption of raspberry leaf tea.

- Polyhydramnios with frequent use of senna preparations.

Nursing mothers may have restrictions on the use of lactogenic plants such as fennel, basil, and turmeric. Interestingly, in recent years there have been interesting recommendations for the use of turmeric in pregnant women. These plants have long been known for their multiple beneficial effects on dyspeptic symptoms, flatulence, abdominal discomfort of various origins, kidney disease, respiratory disease, headache, and more recently, hepatoprotective, antispasmodic, antioxidant, antiviral, antiplatelet, and fibrinolytic properties [30]. Their potential use in the comprehensive therapy of COVID-19 infection has even been considered [4, 13, 34, 46]. Considering the potential pathological changes in the digestive, respiratory, and renal systems of pregnant women and infectious processes of various localizations, including COVID-19, further clarifying research can be considered promising.

(headache, dryness, irritation of the oral mucosa, unformed stools, diarrhea, allergy, drowsiness in mothers, and in fetuses in the second or third trimester – development of interventricular septal defects, In the second and third trimester of pregnancy – development of interventricular septum defects, right lung pathology, pelviectasis, and in the near gestational period-decreased head circumference in newborns), licorice (threat of premature labor, restlessness, aggressive behavior, possible preeclampsia, later – early puberty in girls, endocrine problems in adults), raspberry (hypoglycemia, increased need for cesarean section, uterine spasms, diarrhea, constipation, bloating, nausea, headache) are important within this spectrum. The interactions of ginger with metformin (increased hypoglycemic effect), aspirin (increased antiplatelet effect), nifedipine (synergistic effect), chamomile with diazepam, dihydrocodeine (increased sedative effect), non-steroidal anti-inflammatory drugs, benzodiazepines (inhibition of CYPA12 and CYP2D6 action) are indicated. However, it should be noted that similar consequences are possible with long-term use of these herbal remedies, especially at significant doses. In most publications it is mentioned that pregnant and postpartum mothers used various herbal remedies for only a short period (5-14 days) to alleviate the corresponding symptoms without noticing any side effects. Local application of herbal remedies rarely resulted in side effects, usually of allergic origin. Therefore, numerous sources from different countries share a common opinion: the use of phytotherapeutic remedies during pregnancy and the postnatal period is moderately effective and safe. However, the views of obstetricians and gynecologists, especially those of the Romanian researchers C. Grigoriu et al [21], are considered more important in this matter. They emphasize the need for modern approaches and quality control, starting from the cultivation and subsequent stages of processing plant raw materials in accordance with international rules, regulatory and registration processes of phytotherapeutic remedies. They point out the significant difference between traditional empirical phytotherapy, without proper scientific evidence and clinical trials, and modern phytotherapy based on scientific, phytochemical, pharmacognostic and toxicological studies (phytonutrition). Such an approach allows not only to study the mechanisms of action of medicinal plant factors on a modern level, but also to scientifically justify the formation of phytocomplexes from different plants with synergistic or multifunctional positive effects. Certain components of medicinal plants are classified as prohibited during pregnancy. For example, plants containing alkaloids, coumarins, saponins, sesquiterpene lactones, cucurbitacins, and anthraquinones are considered dangerous for pregnant women. Some plants are either prohibited or have warnings during pregnancy due to their emetic or diuretic effects. Plants with emetic effects include Yarrow (Achillea milefolium), Garden Rue (Ruta graveolens), Sage (Salvia officinalis), Motherwort (Leonurus cardiaca), Sweet Flag (Acorus calamus), Calendula (Calendula officinalis), Licorice (Glycyrrhiza glabra), Parsley (Petroselinum crispum), Thyme (Satureja hortensis), Fennel (Foeniculum vulgare), Wormwood (Artemisia absinthium), Hibiscus (Hibiscus syriacus), Coltsfoot (Tussilago farfara), Verbena

What therapeutic regimens are recommended for the practical use of herbal remedies? A group of Romanian researchers, including obstetrician-gynecologists, pharmacologists and ecologists, led by Grigoriu C. et al [21], based on an in-depth analysis of scientific reviews and meta-analyses, propose the following schemes

- For pregnancy disorders in the first trimester: infusions of small amounts of chamomile, mint, ginger, hops, or inhalations of essential oils of lavender, lemon, rose hip, mint, ginger.

- For insomnia: weak infusions of valerian root, lime blossom, hops cones, lemon balm, or mint leaves, separately or in combination.

- For gastrointestinal disorders: infusions of ginger root, chamomile flowers, mint leaves, fennel seeds. However, laxative teas and chamomile should not be used for constipation because they stimulate uterine contractions and may increase the risk of premature labor. However, mild laxatives such as flaxseed or psyllium leaf extract and cranberry fruit extract may be used.

- Hemorrhoids: Creams containing poplar buds, witch hazel leaves, oak bark, or hemorrhoidal suppositories containing extracts of witch hazel, poplar buds, and horse chestnut seeds.

- Urinary tract infections: infusions of cranberry berries or leaves, blackberry leaves, goldenrod. The most substantiated evidence regarding cranberries for urinary tract infections comes from the research of Norwegian scientists [25], who conducted a study involving a large group of pregnant women (68.5 thousand) at different stages of pregnancy and early postnatal period and established the significant effectiveness and safety of cranberry use for mothers, pregnancy outcomes, fetal development and lactation. They consider cranberry products as first-line agents for asymptomatic bacteriuria. In Ukraine, such products are known as diuretic supplements, including "Krenfors", which has antibacterial, antifungal, antiinflammatory, diuretic and antioxidant properties.

- Venous pathology: for prevention, infusions of nettle leaves, witch hazel, yarrow or venotonic capsules with horse chestnut or witch hazel extract and consumption of bitter lemon.

- Anemia: Stinging nettle, dandelion, elderberry juice, bee pollen infusions.

- During childbirth: substances that stimulate labor (infusions, tinctures) of yarrow, raspberry twigs and leaves, vervain, blackberry, cimicifuga, cinnamon (bark, powder).

- Hypogalactia (low milk supply): infusions, teas of anise, fennel, black cumin, chamomile flowers.

 Weaning: mint, sorrel, thyme, stinging nettle, sheep's sorrel teas, application of local compresses or infusions of jasmine, parsley leaves, cabbage to the mammary glands.

- Mastitis: compresses with concentrated infusion of thyme seeds for one hour a day on the affected area or compresses with crushed cabbage leaves.

- Postpartum depression: infusions and preparations with St. John's wort, aromatherapy with essential oils of lavender, jasmine, lemon, tea rose.

- Infusions of echinacea, ginger root, mint, lemon, lime, blackcurrant leaves and fruit, rose hip, poplar buds, propolis.

- COVID-19 infections during pregnancy: infusions and preparations of echinacea, ginger root, cinnamon powder, turmeric, bee products (propolis, pollen, royal jelly) [4, 49, 51].

From a practical point of view, the views of the well-known German phytotherapist Baumler S. [8] is important, as he highlights medicinal plants for external use (vulvitis, colpitis, vaginal wounds, mastitis) with antiinflammatory, antibacterial, reparative and anti-edematous activity: oak bark, witch hazel, white nettle, yarrow, plants containing essential oils such as sage, chamomile, thyme, lavender, marjoram, thyme, tea tree, St. John's wort, mallow (sprays, compresses, baths). For internal use, this scientist considers the use of raspberry and blackberry leaf infusions as possible in cases of nausea and vomiting in pregnant women.

In recent decades, there has been an increasing need for cesarean deliveries and sometimes other surgical interventions in pregnant women who have used various phytotherapeutic remedies. In this context, it is necessary to follow the recommendations of the European and American Societies of Anesthesiology, which state that phytotherapeutic agents should be discontinued two weeks before surgery [17, 27, 48]. Discussion. One of the important global problems of humanity is the increasing incidence of diseases, especially during the reproductive period, due to various environmental, socioeconomic, modern lifestyle and nutritional factors, among others. This problem becomes more acute during pregnancy, postpartum and lactation, when the use of modern synthetic drugs is undesirable or insufficiently studied. In such cases, it is necessary to resort to traditional medicine of the past and modern phytotherapeutic agents. Scientists from leading research centers around the world, in analytical reviews, note the growing interest in the use of phytotherapy for various pregnancy pathologies and in the postnatal period, both in developed countries and in countries with weak economies and medical sectors. They study the common approaches and their differences, the availability of information in these countries, and the prospects for further research in line with the realities of life. It is noted that in countries with weak economies, the use of herbal remedies during pregnancy and the postnatal period often occurs according to folk traditions, mainly as a result of the pregnant women's own initiative or recommendations from friends, family, and less often from obstetric-gynecological personnel, phyto-pharmacy employees, or the mass media, among others [1, 18, 19, 38]. In most cases, it is the amateur use at home (teas, decoctions, infusions, powders, ointments) without clear recommendations regarding the duration of use, criteria of efficacy, or mention of side effects. In general, however, such approaches and forms of use have been found to be effective and safe [19, 21, 29, 55].

Meanwhile, in developed countries of the world, the modern approach to the use of herbal remedies for this population differs in high requirements for their production according to international GMP standards, justification of their use primarily based on evidence-based medicine, sources of information for obstetric-gynecological and

pharmaceutical personnel, availability of contemporary scientific and practical literature, appropriate training of medical personnel, and rare use of herbal remedies as a result of self-initiative or information from the Internet, advice from friends or family [35, 37]. The effectiveness and possible side effects of the herbal remedies used, as well as their impact on the mother's body, the fetus, and the lactation process (mental-emotional, spiritual, cultural state) are more clearly monitored. Ways to improve this process are being studied (training of medical personnel, pregnant women, lactating mothers, training at different levels, publication of specialized literature, use of modern communication tools), as well as the development of new functional food supplements, teas, tablets, capsules, infusions with extracts of medicinal plants, probiotic supplements, creams, ointments, and essential oils for inhalation or topical application. Developed countries have government regulatory agencies that monitor the efficacy and potential side effects of herbal medicinal products. Examples include the FDA (Food and Drug Administration) in the United States, the European Medicines Agency in Europe, and the Healthcare Products Regulatory Agency in the United Kingdom.

In recent decades, beekeeping products such as propolis, pollen, royal jelly, and bee bread have been increasingly used as phytotherapeutic agents for the aforementioned purposes [49]. It is obvious that modern medical care for women during pregnancy, postpartum, including lactation, should be based on medical pluralism, combining traditional Eastern and Western folk medicine with modern allopathic medicine [5, 7, 9, 21, 28]. Traditional Eastern and Western folk medicine is also referred to in the literature as complementary and alternative medicine (CAM). Specialists in this field of medicine are scarce in most countries of the world, even in developed countries. In complex cases of pregnancy and the postnatal period, it may be necessary to include CAM specialists in the medical team. Given the trends of increasing frequency and severity of diseases affecting women during these periods of their lives, and the growing future demand for qualified CAM interventions, the shortage of specialists in this field poses a challenge to obstetric-gynecological personnel, who will need to independently acquire knowledge and skills in CAM as one of the ways to increase the effectiveness of medical care for this important group of women.

The authors of this article have their own extensive experience in the successful use of various herbal remedies and beekeeping products in pregnant and postpartum women, as highlighted in a series of monographs [49, 50, 51]. Our data on efficacy, forms, and methods of application are consistent with the materials presented in the article. Specifically, we have used the following phytotherapeutic agents for various manifestations of pathology in pregnant and postnatal women

- For gastrointestinal disorders: remedies with ginger, fennel seeds, dill, linseed, lemon balm and chamomile.

 For infectious processes: Protiflazid, Immunoflazid, Umkalor, remedies with eucalyptus, echinacea, yarrow and propolis.

- For postnatal depression: remedies with valerian, yarrow, lemon balm, mint, hop cones and cimicifuga.

- For anemia: beekeeping products (royal jelly with honey and pollen, propolis), spirulina.

- For postnatal asthenia: beekeeping products, propolis, feverfew, extracts of Eleutherococcus and Rhodiola rosea.

All in all, the level of phytotherapy use among this group of patients in Ukraine is somewhat reminiscent of that in Third World countries. However, there are significant manifestations of modern approaches similar to those in developed countries. For example, the pharmaceutical market offers a considerable and constantly growing number of domestic and foreign phytotherapeutic products manufactured according to modern international GMP standards. Regional production centers for such products have been established and are developing in the Kyiv, Zhytomyr, Zakarpattia and Poltava regions. However, in comparison with European countries, the use of these products based on the recommendations of obstetriciangynecologists and pediatricians is insufficient. The reasons for this are the low level of modern knowledge and experience of specialists in phytotherapy, insufficient information and educational components in this process, poorly functioning educational courses and training in this field at clinical departments of medical universities, and insufficient attention of central and local medical authorities to the development and implementation of phytotherapy as an important component of medical pluralism in providing assistance to this significant group of patients. In Ukraine, the rich plant resources of the Carpathian region are underutilized, and modern phytosanitary technologies, as in Germany, are not yet applied in pharmaceutical production. In our country there is only one scientific research institute of phytotherapy at Uzhhorod National University, only one department of phytotherapy at Kyiv Medical University of the Association of Folk Medicine, which is capable of training specialists - phytotherapists. There is only one specialized journal «Phytotherapy. Journal», which is rarely generalized and distributed with the experience of domestic and foreign scientists in this field. Although the relevance of such clinical research and the informational component for medical personnel and patients is currently evident and promising.

Conclusions: Modern scientific research and medical practice indicate the effectiveness, safety and necessity of using phytotherapy in the pathology of pregnancy and the postnatal period as an important component of medical pluralism. The means and forms of its application should comply with international GMP requirements and recommendations of evidence-based medicine. In order to increase the effectiveness of phytotherapy use, further scientific research, personnel training, educational courses and training for phytotherapists, obstetric-gynecological personnel and appropriate state attention to this medical field are recommended.

Conflicts of Interest: Authors declare no conflicts of interest.

Funding: This work was conducted without grant support.

References:

1. Achmed M, Hwang JM, Hasan MA, Han D. Herbal medicine use by pregnant women in Bangladesh: a cross-sectional study. BMC Complement Altern Med [Internet]. 2018[cited 2023 May 26];18(1):333. Available from: https://bmccomplementmedtherapies. biomedcentral.com/counter/pdf/10.1186/s12906-018-2399-y.pdf doi: 10.1186/s12906-018-2399-y

2. Amer MR, Cipriano GC, Venci JV, Gandhi MA. Safety of Popular Herbal Supplements in Lactating Women. J Hum Lact. 2015;31(3):348-53. doi: 10.1177/0890334415580580

3. Akour A, Kasabri V, Afifi FU, Bulatova N. The use of medicinal herbs in gynecological and pregnancy-related disorders by Jordanian women: a review of folkloric practice vs. evidence-based pharmacology. Pharm Biol. 2016;54(9):1901-18. doi: 10.3109/13 880209.2015.1113994

4. Babaei F, Nassiri-Asl M, Hosseinzadeh H. Curcumin (a constituent of turmeric): New treatment option against COVID-19. Food Sci Nutr. 2020;8:5215-27. doi: 10.1002/fsn3.1858

5. Bafor EE. Potentials for Use of Medicinal Plants in Female Reproductive Disorders – The Way Forward. Afr J Reprod Health. 2017;21(4):9-11. doi: 10.29063/ajrh2017/v21i4.1

6. Muñoz Balbontín Y, Stewart D, Shetty A, Fitton CA, McLay JS. Herbal Medicinal Product Use During Pregnancy and the Postnatal Period: A Systematic Review. Obstet Gynecol. 2019;133(5):920-32. doi: 10.1097/AOG.00000000003217

7. Barnes LAJ, Barclay L, McCaffery K, Aslani P. Complementary medicine products used in pregnancy and lactation and an examination of the information sources accessed pertaining to maternal health literacy: a systematic review of qualitative studies. BMC Complement Altern Med [Internet]. 2018[cited 2023 May 26];18(1):229. Available from: https://bmccomplementmedtherapies. biomedcentral.com/counter/pdf/10.1186/s12906-018-2283-9.pdf doi: 10.1186/s12906-018-2283-9

8. Bäumler S, editor. Heilpflanzenpraxis Heute: Porträts – Rezepturen – Anwendung. Munich: Urban & Fischer bei Elsevier; 2006. Kapitel 13, Gynäkologische Erkrankungen und Geburtshilfe; s. 808-35. doi: 10.1016/B978-3-437-57270-8.X5001-X

9. Bruno LO, Simoes RS, de Jesus Simoes M, Girão MJBC, Grundmann O. Pregnancy and herbal medicines: An unnecessary risk for women's health-A narrative review. Phytother Res. 2018;32(5):796-810. doi: 10.1002/ptr.6020

10. Bucur L, Ionus E, Moise G, Gird C, Schröder V. GS-MS Analysis and bioactive properties of Zingiberis rhizome essential oil. Farmacia, 2020;68(2):280-7. doi: 10.31925/farmacia.2020.2.13

11. Cardoso BS, Amaral VCS. O The use of phytotherapy during pregnancy: a global overview. Cien Saude Colet. 2019;24(4):1439-50. doi: 10.1590/1413-81232018244.07472017

12. Chang JS, Wang KC, Yeh CF, Shieh DE, Chiang LC. Fresh ginger (Zingiber officinale) has anti-viral activity against human respiratory syncytial virus in human respiratory tract cell lines. J Ethnopharmacol. 2013;145(1):146-51. doi: 10.1016/j.jep.2012.10.043

 Cheang KI, Nguyen TT, Karjane NW, Salley KES. Raspberry Leaf and Hypoglycemia in Gestational Diabetes Mellitus. Obstet Gynecol. 2016;128(6):1421-4. doi: 10.1097/AOG.00000000001757

14. Dante G, Bellei G, Neri I, Facchinetti F. Herbal therapies in pregnancy: what works? Curr Opin Obstet Gynecol. 2014;26(2):83-91. doi: 10.1097/GCO.000000000000052

15. Dante G, Pedrielli G, Annessi E, Facchinetti F. Herb remedies during pregnancy: a systematic review of controlled clinical trials. J Matern Fetal Neonatal Med. 2013;26(3):306-12. doi: 10.3109/14767058.2012.722732

16. De Hert S, Staender S, Fritsch G, Hinkelbein J, Afshari A, Bettelli G, et al. Pre-operative evaluation of adults undergoing elective noncardiac surgery: Updated guideline from the European Society of Anaesthesiology. Eur J Anaesthesiol. 2018;35(6):407-65. doi: 10.1097/EJA.00000000000817

17. Eid AM, Jaradat N. Public Knowledge, Attitude, and Practice on Herbal Remedies Used During Pregnancy and Lactation in West Bank Palestine. Front Pharmacol [Internet]. 2020[cited 2023 May 26];11:46. Available from: https://www.frontiersin.org/articles/10.3389/fphar.2020.00046/full doi: 10.3389/fphar.2020.00046

18. Frawley J, Adams J, Steel A, Broom A, Gallois C, Sibbritt D. Women's Use and Self-Prescription of Herbal Medicine during Pregnancy: An Examination of 1,835 Pregnant Women. Womens Health Issues. 2015;25(4):396-402. doi: 10.1016/j.whi.2015.03.001

19. Frawley J, Adams J, Sibbritt D, Steel A, Broom A, Gallois C. Prevalence and determinants of complementary and alternative medicine use during pregnancy: results from a nationally representative sample of Australian pregnant women. Aust N Z J Obstet Gynaecol. 2013;53(4):347-52. doi: 10.1111/ajo.12056

20. Grigoriu C, Varlas V, Călinescu G, Bălan AM, Bacalbașa N, Gheorghe CM, et al. Phytotherapy in obstetrics – therapeutic indications, limits, and dangers. J Med Life. 2021;14(6):748-55. doi: 10.25122/jml-2021-0353

21. Hall HR, Jolly K. Women's use of complementary and alternative medicines during pregnancy: a cross-sectional study. Midwifery. 2014;30(5):499-505. doi: 10.1016/j.midw.2013.06.001

22. Hall HG, Griffiths DL, McKenna LG. The use of complementary and alternative medicine by pregnant women: a literature review. Midwifery. 2011;27(6):817-24. doi: 10.1016/j.midw.2010.08.007

23. Heitmann K, Nordeng H, Holst L. Safety of ginger use in pregnancy: results from a large population-based cohort study. Eur J Clin Pharmacol. 2013;69(2):269-77. doi: 10.1007/s00228-012-1331-5

24. Heitmann K, Nordeng H, Holst L. Pregnancy outcome after use of cranberry in pregnancy – the Norwegian Mother and Child Cohort Study. BMC Complement Altern Med [Internet]. 2013[cited 2023 May 26];13:345. Available from: https://bmccomplementmedtherapies.biomedcentral.com/counter/pdf/10.1186/1472-6882-13-345.pdf doi: 10.1186/1472-6882-13-345

25. Jahan S, Mozumder ZM, Shill DK. Use of herbal medicines during pregnancy in a group of Bangladeshi women. Heliyon [Internet]. 2022[cited 2023 May 26];8(1): e08854. Available from: https://www.cell.com/action/showPdf?pii=S2405-8440%2822%2900142-6 doi: 10.1016/j.heliyon.2022.e08854

26. Kam PC, Barnett DW, Douglas ID. Herbal medicines and pregnancy: A narrative review and anaesthetic considerations. Anaesth Intensive Care. 2019;47(3):226-34. doi: 10.1177/0310057X19845786

27. Kennedy DA, Lupattelli A, Koren G, Nordeng H. Safety classification of herbal medicines used in pregnancy in a multinational study. BMC Complement Altern Med [Internet]. 2016[cited 2023 May 26];16:102. Available from: https://bmccomplementmedtherapies. biomedcentral.com/counter/pdf/10.1186/s12906-016-1079-z.pdf doi: 10.1186/s12906-016-1079-z

28. Kıssal A, Çevik Güner Ü, Batkın Ertürk D. Use of herbal product among pregnant women in Turkey. Complement Ther Med. 2017;30:54-60. doi: 10.1016/j.ctim.2016.11.001

29. Kocaadam B, Şanlier N. Curcumin, an active component of turmeric (Curcuma longa), and its effects on health. Crit Rev Food Sci Nutr. 2017;57(13):2889-95. doi: 10.1080/10408398.2015

30. Lewicka A, Szymański Ł, Rusiecka K, Kucza A, Jakubczyk A, Zdanowski R, et al. Supplementation of Plants with Immunomodulatory Properties during Pregnancy and Lactation-Maternal and Offspring Health Effects. Nutrients [Internet]. 2019[cited 2023 May 26];11(8):1958. Available from: https://www.mdpi.com/2072-6643/11/8/1958 doi: 10.3390/nu11081958

31. Levy I, Attias S, Ben-Arye E, Goldstein L, Schiff E. Adverse events associated with interactions with dietary and herbal supplements among inpatients. Br J Clin Pharmacol. 2017;83(4):836-45. doi: 10.1111/bcp.13158

32. Louik C, Gardiner P, Kelley K, Mitchell AA. Use of herbal treatments in pregnancy. Am J Obstet Gynecol [Internet]. 2010[cited 2023 May 26];202(5):439.e1-10. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2867842/pdf/nihms173069.pdf doi: 10.1016/j.ajog.2010.01.055

33. Luo H, Tang QL, Shang YX, Liang SB, Yang M, Robinson N, et al. Can Chinese Medicine Be Used for Prevention of Corona Virus Disease 2019 (COVID-19)? A Review of Historical Classics, Research Evidence and Current Prevention Programs. Chin J Integr Med. 2020;26(4):243-50. doi: 10.1007/s11655-020-3192-6

34. Di Vito M, Gentile M, Mattarelli P, Barbanti L, Micheli L, Mazzuca C, et al. Phytocomplex Influences Antimicrobial and Health Properties of Concentrated Glycerine Macerates. Antibiotics (Basel) [Internet]. 2020[cited 2023 May 26];9(12):858. Available from: https://www.mdpi.com/2079-6382/9/12/858 doi: 10.3390/antibiotics9120858

35. McLay JS, Izzati N, Pallivalapila AR, Shetty A, Pande B, Rore C, et al. Pregnancy, prescription medicines and the potential risk of herb-drug interactions: a cross-sectional survey. BMC Complement Altern Med [Internet]. 2017[cited 2023 May 26];17(1):543. Available from: https://bmccomplementmedtherapies.biomedcentral.com/counter/pdf/10.1186/s12906-017-2052-1.pdf doi: 10.1186/s12906-017-2052-1

36. Mollart L, Skinner V, Adams J, Foureur M. Midwives' personal use of complementary and alternative medicine (CAM) influences their recommendations to women experiencing a post-date pregnancy. Women Birth. 2018;31(1):44-51. doi: 10.1016/j.wombi.2017.06.014

37. Nalumansi PA, Kamatenesi-Mugisha M, Anywar G. Medicinal Plants used during Antenatal Care by Pregnant Women in Eastern Uganda. Afr J Reprod Health. 2017;21(4):33-44. doi: 10.29063/ajrh2017/v21i4.4

38. Nega SS, Bekele HM, Meles GG, Nordeng H. Medicinal Plants and Concomitant Use with Pharmaceutical Drugs Among Pregnant Women. J Altern Complement Med. 2019;25(4):427-34. doi: 10.1089/acm.2018.0062

39. Nencu R, Popescu LM, Istudor V, Costca T, Dutu LE, Gird CE. The selection of technological parameters in oder to obtain an extract with important antioxidant activity from stinging nettle leaves. Farmacia. 2017;65(2):295-300.

40. Rayner JA, Willis K, Burgess R. Women's use of complementary and alternative medicine for fertility enhancement: a review of the literature. J Altern Complement Med. 2011;17(8):685-90. doi: 10.1089/acm.2010.0435

41. Shawahna R, Taha A. Which potential harms and benefits of using ginger in the management of nausea and vomiting of pregnancy should be addressed? a consensual study among pregnant women and gynecologists. BMC Complement Altern Med [Internet]. 2017[cited 2023 May 26];17(1):204. Available from: https://bmccomplementmedtherapies.biomedcentral.com/counter/pdf/10.1186/s12906-017-1717-0.pdf doi: 10.1186/s12906-017-1717-0

42. Steel A, Adams J, Sibbritt D, Broom A, Gallois C, Frawley J. Utilisation of complementary and alternative medicine (CAM) practitioners within maternity care provision: results from a nationally representative cohort study of 1,835 pregnant women. BMC Pregnancy Childbirth [Internet]. 2012[cited 2023 May 26];12:146. Available from: https://bmcpregnancychildbirth.biomedcentral.com/ counter/pdf/10.1186/1471-2393-12-146.pdf doi: 10.1186/1471-2393-12-146

43. Trabace L, Tucci P, Ciuffreda L, Matteo M, Fortunato F, Campolongo P, et al. "Natural" relief of pregnancy-related symptoms and neonatal outcomes: above all do no harm. J Ethnopharmacol. 2015;174:396-402. doi: 10.1016/j.jep.2015.08.046

44. Viljoen E, Visser J, Koen N, Musekiwa A. A systematic review and meta-analysis of the effect and safety of ginger in the treatment of pregnancy-associated nausea and vomiting. Nutr J [Internet]. 2014[cited 2023 May 26];13:20. Available from: https:// nutritionj.biomedcentral.com/counter/pdf/10.1186/1475-2891-13-20.pdf doi: 10.1186/1475-2891-13-20

45. Yang Y, Islam MS, Wang J, Li Y, Chen X. Traditional Chinese Medicine in the Treatment of Patients Infected with 2019-New Coronavirus (SARS-CoV-2): A Review and Perspective. Int J Biol Sci. 2020;16(10):1708-17. doi: 10.7150/ijbs.45538

46. Yusof J, Mahdy ZA, Noor RM. Use of complementary and alternative medicine in pregnancy and its impact on obstetric outcome. Complement Ther Clin Pract. 2016;25:155-63. doi: 10.1016/j.ctcp.2016.09.005

47. Zimpel SA, Torloni MR, Porfírio GJ, Flumignan RL, da Silva EM. Complementary and alternative therapies for post-caesarean pain. Cochrane Database Syst Rev [Internet]. 2020[cited 2023 May 26];9(9): CD011216. Available from: https://www.cochranelibrary. com/cdsr/doi/10.1002/14651858.CD011216.pub2/full#0 doi: 10.1002/14651858.CD011216.pub2

48. Voloshyn OI, Boichuk TM, Voloshyna LO. Produkty bdzhil'nytstva na sluzhbi zdorov'ia liudyny [Bee products in the service of human health]. Chernivtsi: Rodovid; 2020. 175 s. (in Ukrainian).

49. Voloshyn OI, Boichuk TM, Voloshyna LO, Vasiuk VL. Likars'ki roslyny Karpat ta prylehlykh terytorii [Medicinal plants of the Carpathians and surrounding areas]. Vyzhnytsia: Cheremosh; 2012. 335 s. (in Ukrainian).

50. Voloshyn OI, Vasiuk VL, Voloshyna LO, Malkovych NM, Seniuk BP, Hlubochenko OV. Osnovy fitoterapii i homeopatii [Fundamentals of phytotherapy and homeopathy]. 2-e vydannia. Chernivtsi: Misto; 2017. s. 473-95. (in Ukrainian).

51. Kempbell K, Kempbell T. Kytais'ke doslidzhennia. Klasychna knyha pro zv'iazok zdorov'ia ta yizhi (pereklad z anhliis'koi movy) [The Chinese Study. A classic book on the relationship between health and food (translated from English)]. Kharkiv: Klub simeinoho dozvillia; 2019. 430 s. (in Ukrainian).

52. Trakhtenberh IM, redaktor. Profilaktychna toksykolohiia ta medychna ekolohiia [Preventive toxicology and medical ecology]. Kyiv: Avitsenna; 2011. 317 s. (in Ukrainian).

53. Romaniuk YuK, Frolov VM. Likars'ki roslyny v narodnii medytsyni (entsyklopedychnyi dovidnyk) [Medicinal plants in folk medicine (encyclopaedic reference)]. Luhans'k: LDMU; 2012. 212 s. (in Ukrainian).

54. Chekman IS. Klinichna fitoterapiia [Clinical phytotherapy]. Kyiv: A.S.K.; 2003. 550 s. (in Ukrainian).

ОСОБЛИВОСТІ ЗАСТОСУВАННЯ ФІТОТЕРАПЕВТИЧНИХ ЗАСОБІВ ПРИ ВАГІТНОСТІ І В ПОСТНАТАЛЬНОМУ ПЕРІОДІ: ПОКАЗАННЯ, ОБМЕЖЕННЯ ТА ЗАГРОЗИ (ОГЛЯД ЛІТЕРАТУРИ ТА ВЛАСНЕ ДОСЛІДЖЕННЯ)

О. І. Волошин, Л. О. Волошина, О. І. Доголіч, Г. В. Бачук-Понич, І. В. Окіпняк

Буковинський державний медичний університет (м. Чернівці, Україна)

Резюме

Зростання захворюваності жінок під час вагітності та в післяпологовому періоді, відомі обмеження застосування сучасних синтетичних лікарських засобів зумовлюють пошук шляхів медичної допомоги, зокрема застосування фітотерапії.

Мета: висвітлити світовий та власний досвід застосування фітотерапевтичних засобів під час вагітності та в післяпологовому періоді, показання, обмеження та загрози.

Матеріали і методи: використано доступні монографічні та журнальні джерела в електронних системах MED Line, EM-BASE, Scopus, Web of Science із застосуванням методів аналізу, порівняння та узагальнення.

Результати. Встановлено, що вчені провідних наукових центрів світу констатують зростання інтересу до використання методів фітотерапії як одного з важливих підходів медичного плюралізму при патології вагітності та в постнатальному періоді залежно від рівня економічного розвитку та стану медичної промисловості держави та спільності та відмінності принципів і форм надання фітотерапевтичної допомоги. Спільність полягає в тому, що навіть старовинні та прості методи та засоби фітотерапії у цього контингенту хворих, поряд із сучасними в розвинених країнах, хоч і різною мірою, але ефективні та безпечні.

У країнах з низьким соціоекологічним рівнем все ще змушені використовувати прості методи за давніми традиціями, в основному за власною ініціативою або за порадою друзів, родини, рідше – за рекомендаціями спеціалістів без чітких рекомендацій щодо тривалість і віддалені наслідки застосування, що є несприятливим.

Існує певна відмінність використання фітотерапії в розвинутих країнах Європи та США в тому, що різні засоби, форми рослинних препаратів переважно виготовляються відповідно до сучасних вимог, рекомендуються на основі доказової медицини; належним чином підготовлений акушерсько-гінекологічний персонал, доступні сучасні джерела інформації для вдосконалення медичного персоналу, навчання вагітних. Відстежується чітка ефективність і побічна дія рослинних препаратів, їх вплив на організм матері, плода та процеси лактації. Проводяться різноманітні тренінги та форми удосконалення застосування фітопрепаратів та необхідні тісні контакти акушерів-гінекологів з фахівцями комплементарної та нетрадиційної медицини.

Висновки. Сучасні наукові дослідження свідчать про ефективність, безпеку та необхідність застосування рослинних препаратів при патології вагітності та післяпологового періоду як одного з важливих компонентів медичного плюралізму. Особливості їх застосування мають відповідати вимогам DMR та бути рекомендованими на основі доказової медицини.

Ключові слова: вагітність; післяпологовий період; фітотерапія; застосування; безпека; навчання.

Contact Information:

Oleksandr Voloshyn – Doctor of Medical Sciences, Honored Doctor of Ukraine, Professor of the Department of Propaedeutics of Internal Medicine, Bukovyna State Medical University, Chernivtsi, Ukraine.

ORCID: http://orcid.org/0000-0001-6833-8022

Larisa Voloshyna – Doctor of Medical Sciences, Professor of the Department of Internal Medicine of Bukovyna State Medical University, Chernivtsi, Ukraine. e-mail: voloshka03@ukr.net ORCID: http://orcid.org/0000-0003-2006-2914 Web of Science/Researcher ID: D-1590-2017

Oleksandra Dogolich – candidate of medical sciences, associate professor of the department of propaedeutics of internal diseases of Bukovyna State Medical University, Chernivtsi, Ukraine. e-mail: doholich.oleksandra@bsmu.edu.ua ORCID: http://orcid.org/0000-0002-5309-2602

()

Контактна інформація:

Волошин Олександр Іванович – доктор медичних наук, Заслужений лікар України, професор кафедри пропедевтики внутрішніх хвороб Буковинського державного медичного університету, м. Чернівці, Україна.

ORCID: http://orcid.org/0000-0001-6833-8022

Волошина Лариса Олександрівна – доктор медичних наук, професор кафедри внутрішньої медицини Буковинського державного медичного університету, м. Чернівці, Україна. e-mail: voloshka03@ukr.net ORCID: http://orcid.org/0000-0003-2006-2914 Web of Science/Researcher ID: D-1590-2017

Доголіч Олександра Ігорівна – кандидат медичних наук, доцент кафедри пропедевтики внутрішніх хвороб Буковинського державного медичного університету, м. Чернівці, Україна. e-mail: doholich.oleksandra@bsmu.edu.ua ORCID: http://orcid.org/0000-0002-5309-2602

> Received for editorial office on 10/05/2023 Signed for printing on 15/08/2023