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SELECTED DRUGS USED IN BREAST CANCER TREATMENT AND THE POTENTIAL OF TRADITIONAL MEDICINE

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Abstract
The article highlights the benefits and complications of the main synthetic drugs used in the treatment of breast cancer. It also analyzes the use of traditional medicine and integrative methods alongside standard treatment, as well as their evidence-based potential.

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INTRODUCTION

Breast cancer is the most common malignant tumor in women. In 2022, more than 2.3 million new cases and nearly 670,000 deaths were recorded worldwide [1]. In our country, too, this disease ranks first among cancers in women, with an incidence of 27.8 cases per 100,000 population [2].

Today, the drugs used to treat breast cancer contribute substantially to patients' recovery. However, almost all of them have serious adverse effects, and it is no secret that patients suffer not only from the cancer itself but also from the complications of its treatment. Developing safe traditional medicine methods and natural remedies that alleviate these complications is therefore one of the most pressing scientific and practical tasks.

1. Benefits, adverse effects and complications of the main drugs.

Chemotherapeutic agents (doxorubicin, epirubicin, paclitaxel, docetaxel, cyclophosphamide, capecitabine, carboplatin) destroy rapidly dividing tumor cells. In early-stage disease, they significantly reduce the risk of recurrence and death [3, 4]. However, they also damage healthy, rapidly dividing cells. This results in hair loss, severe nausea and vomiting, mouth ulcers, reduced blood cell counts and a risk of serious infections. Anthracyclines (doxorubicin, epirubicin) can cause irreversible damage to the heart muscle and lead to heart failure [5]. Taxanes cause neuropathy with numbness and pain in the hands and feet, which sometimes persists for years after treatment has ended [6]. Some drugs cause infertility and early menopause.

Hormonal agents (tamoxifen, letrozole, anastrozole) reduce the risk of recurrence and death in hormone-dependent cancer, but must be taken for 5–10 years. Tamoxifen increases the risk of blood clots and uterine cancer, while aromatase inhibitors increase bone fragility and the incidence of fractures [7].

Targeted therapies and immunotherapy (trastuzumab, trastuzumab deruxtecan, pembrolizumab) significantly prolong survival in certain types of cancer. At the same time, trastuzumab can impair cardiac function, and trastuzumab deruxtecan can cause lung inflammation (pneumonitis), which is sometimes fatal. This complication was reported in 12.1% of patients [8]. Immunotherapy, in turn, may cause the immune system to attack the body's own organs (thyroid gland, intestine, lungs, liver) [9].

Table 1.

Brief overview of the main drug groups

Drug group	Benefit	Harm
Anthracyclines	Reduce recurrence and mortality	Cause cardiac damage, vomiting and hair loss
Taxanes	Effective in both early and advanced stages	Cause neuropathy, infections and edema
Hormonal agents	Provide long-term protection of healthy cells	Cause bone fragility, thrombosis and joint pain
Targeted agents	Prolong survival	Cause potentially fatal cardiac damage and pneumonitis
Immunotherapy	Effective in aggressive cancer	Cause autoimmune inflammation

Complications not only reduce the patient's quality of life but also jeopardize the treatment itself. For example, more than half of patients taking aromatase inhibitors experience severe joint pain, and nearly half of them stop taking the drug or reduce the dose [10]. This, in turn, increases the risk of disease recurrence.

Many effective anticancer drugs have also been derived from plants. For example, paclitaxel was obtained from a compound isolated from the bark of the Pacific yew (Taxus brevifolia) [11], while docetaxel is synthesized from a substance extracted from the needles of the European yew (Taxus baccata). Vinorelbine and vincristine are semisynthetic derivatives of alkaloids from the Madagascar periwinkle (Catharanthus roseus). Eribulin was developed from a compound discovered in a marine sponge. However, because most of these drugs are semisynthetic, they are not free from harmful properties and complications [12]. These examples show that searching the plant kingdom for compounds with anticancer activity is a promising line of research.

2. The potential of traditional medicine in the treatment of breast cancer.

Today, not only in our country but worldwide, the integrative use of traditional medicine alongside standard treatment of breast cancer, as with other diseases, is producing wide-ranging positive results. In particular, traditional medicine methods and remedies are highly effective in reducing the adverse effects and complications of the drugs used in standard therapy. In addition, by strengthening the body's immunity, traditional medicine methods are proving effective in preventing the spread of cancer and in improving survival and resistance to the disease.

For instance, our team has developed composite natural dietary supplements – “Ascurcumin”, “Aslidoksifen”, “Antivir” and “Majmui Rahmoniy” – based on plant extracts and concentrates containing compounds such as curcumin (turmeric), catechins and resveratrol. Laboratory tests have confirmed their beneficial effect on tumor cells without harm or complications, and clinical studies have demonstrated their effectiveness in treating various types of cancer in patients. On the basis of this scientific evidence, these dietary supplements have been registered with the Ministry of Health of the Republic of Uzbekistan and introduced into practice under official authorization. When used, particularly after radiotherapy and chemotherapy, these natural supplements increase resistance to the disease by boosting the body's immunity. They also support the proliferation of healthy cells and the integrity of tissues, while restricting the nutrient supply of cancer cells, thereby slowing their proliferation and progression [13, 14].

Worldwide, too, physical exercise and traditional medicine methods that influence the state of body and mind are used alongside standard therapy [15]. For example, the American Society of Clinical Oncology (ASCO) and the Society for Integrative Oncology (SIO) have developed recommendations on such methods for breast cancer [16, 17]. The effectiveness of some of them has been scientifically proven. In particular, ginger and other medicinal plants have been shown to boost immunity and reduce nausea and vomiting after chemotherapy [18]. Acupuncture is recommended for reducing metastasis [19]. Clinical studies have shown that women who received acupuncture twice a week for six weeks experienced less joint pain caused by aromatase inhibitors [20]. By alleviating complications, these methods help patients complete their full course of treatment – and this is precisely their greatest benefit.

Conclusion. Synthetic and semisynthetic drugs used in breast cancer play an important role in saving patients' lives, but they can cause serious damage to the heart, nervous system, blood, bones and other organs. These complications sharply reduce patients' quality of life and often lead to discontinuation of treatment, and even to death. Traditional medicine, by contrast, can produce positive effects without complications when used as a preventive measure in healthy individuals, and even without synthetic drugs in patients at the early stages of the disease. At more advanced stages, the integrative use of traditional medicine alongside standard therapy strengthens the body's immunity and thereby, first, alleviates the complications of chemotherapy or radiotherapy; second, prevents the proliferation and progression of cancer cells; and third, has a positive effect on the survival and proliferation of healthy cells. It is therefore recommended that cancer patients use traditional medicine methods and remedies on a regular basis and resort to synthetic drugs only when necessary.

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