



the presence of numerous side effects leads to the search for possibilities of different methods of influence, phytotherapy in particular, on the tumor and the body as a whole.

Phytotherapy is an important complement to post-stage treatment of cancer patients and allows the maximum individualization of therapy, taking into account the peculiarities of the organism, the role of individual systems in the development of the disease, and metabolism. Herbal preparations compensate the general condition of cancer patients, especially during combined treatment with chemotherapy, radiotherapy, preparation for surgery and period after operation.

Low toxicity of plant products and a wide range of their effects on the body allow long and successful using of medicinal plants, especially as a symptomatic remedy in combination with other modern treatments.

The first result that should be achieved by a purposeful treatment by means of remedies on the basis of medicinal plants is: reduced severity of pain syndrome, improved sleep, compensation of neurotic condition. Against the ground of severe pain, even a slight relief of the patient's condition is of great importance for the control of ailment. Peripheral action of phytotherapy in the site of spasm, edema, tissue compression and irritation of nerve endings are an important complement to central effects of analgesics that are prescribed to patients with oncological disease.

The possibilities of phytotherapy can achieve the effect associated with improving the function of the body or system. The use of herbal remedies in the prevention of relapses and metastases of tumors is of a particular interest. Moreover, the complex use of herbs, diet and medicines is very important for long-term cancer prevention. Immunomodulatory effect of herbal preparations is one of the essential factors of oncology and antiretroviral therapy.

Modern methods of secondary prevention, including complex and long-term use of herbal medicine, are not sufficiently developed. Therefore, there is a need for additional research and the administration of medicines on the basis of medicinal raw material into standard therapies.

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#### **AMELIORATION OF GENTAMICIN-INDUCED KIDNEY INJURY BY SYNTHETIC PEPTIDE**

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Acute kidney injury of different degree occurs in one third of patients treated with gentamicin for more than 1 week, being the reason for serious limitation of its use (A. Muthuraman et al., 2011). Search for drugs able to mitigate the toxic effects of aminoglycosides is an active area of research (B.H. Ali et al., 2011).

The aim of our study was to estimate the nephroprotective potential of tripeptide EDL (L-glutamyl-L-aspartyl-leucine) synthesized in the St.-Peterburg Institute of Bioregulation and Gerontology (RF) on a model of gentamicin-induced kidney injury in rats.

Experimental study was conducted on 21 non-linear white rats weighting 150-180 g, divided into three groups (n=7): I group – control, II group – animals with gentamicin-induced kidney injury caused by administration of 4% gentamicin sulfate solution in dose 80 mg/kg once a day during 6 days. Animals of the III group received EDL (3 µg/kg, i.p.) after each gentamicin injection. Kidney function was assessed by diuresis, glomerular filtration rate (GFR), plasma creatinine concentration, urine protein excretion and fractional excretion of sodium. Histopathological examination by light microscopy was conducted to confirm the research results. Data were compared by Mann-Whitney test using SPSS Statistics 17.0.

Administration of gentamicin during 6 days resulted in the toxic kidney injury, manifested in the decrease of diuresis by 54% ( $p < 0.01$ ), increase of plasma creatinine concentration by 3.3 times on the background decrease of GFR by 73% ( $p < 0.01$ ) and significant proteinuria with an increase of protein excretion by 57% ( $p < 0.01$ ) comparing to control. Proximal tubular injury caused an increase of fractional sodium excretion up to 4.55% ( $p < 0.01$ ). Biochemical data correlate with histopathological findings: vacuolar degeneration affected 30%, epithelial necrosis – 70% of proximal tubular cells, the lumen of the tubules were filled with hyaline casts, glomerular congestion and their partial atrophy were also observed. Co-treatment with EDL decreased the severity of renal injury realized in preclusion of oliguria (increase of diuresis by 72% ( $p < 0.01$ ) comparing to untreated animals), prevention of retention azotemia (decrease of plasma creatinine concentration by 2.7 times,  $p < 0.01$ ), reduction of proteinuria by 3.4 times ( $p < 0.05$ ) and normalization of sodium fractional excretion (to 0.87%,  $p < 0.01$ ). Protective effect of peptide is confirmed by the absence of epithelial necrosis, glomerular atrophy, luminal hyaline casts and potentially reversible hydropic swelling of 80% of the proximal tubular cells.

Obtained results suggest the therapeutic potential of tripeptide EDL under the conditions of gentamicin-induced kidney injury confirmed by the amelioration of excretory kidney function and histopathological changes.

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#### **CIRCADIAN CHRONORHYTHMS OF FREE RADICAL OXIDATION UNDER CONDITIONS OF LEAD POISONING AND IMMOBILIZING STRESS IN ALBINO RATS**

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Oxidative stress represents an imbalance between the production and manifestation of reactive oxygen species and a biological system's ability to readily detoxify the reactive intermediates or to repair the resulting damage.