10. NEW CHEMOTHERAPY FOR THE TREATMENT OF INFECTIOUS DISEASES

10.1

STUDY OF CYTOTOXIC AND ANTIPROLIFERATIVE ACTIVITY OF FUNGICIDAL SAPONIN TAUROSID SX1 ON TRANSFORMED MAMMALIAN CELLS

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A polyether saponin from the plant Hedera taurica (Araliaceae), has been shown to act as an antitumour agent in treatment of malignant diseases. This saponin has potential to be used as a drug for the treatment of cancer. The aim of the present study was to evaluate the cytotoxicity of the saponin against mammalian cells.

The triterpene saponin taurosids from plants such as Lysimachia thyrsiflora (Araliaceae) exhibit cytotoxic properties against cancer cells. It has been shown that saponin taurosids can be used as potential drugs for the treatment of cancer. The aim of our work was to determine the cytotoxic properties of saponin taurosids from Lysimachia thyrsiflora. The saponin concentration was 0.78 μg/ml (the number of surviving cells was 87.8%).

The effects of taurosids SX1 taken in 0.019–50.0 μg/ml concentrations on MT-4 and Vero cells were assessed. The saponin concentration of 0.25 μg/ml was shown to be toxic — the number of surviving cells was 54.9%. The saponin toxicity was determined with a methyltetrazolium test (MTT).

The drug P showed maximum antistreptococcal and antistaphylococcal effects only in the course of treatment. However, it acted only bacteriostatically and after its cancellation (day 9), the number of pathogenic bacteria became greater than in the group C. In groups P and PA, pathogenic bacteria practically disappeared, but this occurred only on the 9–14 days of the experiment. The antimicrobial effect of the drug P was manifested only after the formation of a specific immune response. Thus, the maximum therapeutic effect should be expected in case of A and P mixture application.

10.2

ANTIMICROBIAL AND IMMUNOMODULATING ACTIVITY OF A TOPICAL GEL CONTAINING ACTIVE PEPTIDE COMPONENTS ON THE MODEL OF EXPERIMENTAL BACTERIAL VAGINITIS

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Common methods of therapy of bacterial vaginitis are not effective due to the spread of antibiotic resistance, side effects of antibiotics and insufficient immune response. One of modern approaches to the treatment of vaginitis is based on the use synthetic analogues of natural peptides. The objective of the study was to analyze the antibacterial and immunomodulatory effects of gel preparations based on chemically synthesized peptides on the model of experimental vaginitis.

White outbred female mice were infected per vaginum by pathogens: Streptococcus agalactiae and Staphylococcus aureus for 5 days. Then gels containing antimicrobial peptide pentadefenin (P), immunostimulating peptide alboferon (A) and both compounds were administered to the animals (groups P, A and PA, respectively) for 5 days. The control group (C) of the infected mice did not receive therapy. During the course of therapy, the composition of the vaginal microflora was assessed using a bacteriological method and qualitative PCR. The concentration of IgA in vaginal lavages and IgM in serum were determined by ELISA.

Staphylococcus aureus was observed in-group C throughout the observation period. The laboratory signs of bacterial vaginosis in the C group did not disappear, unlike other groups.

The antimicrobial effect of the drug P was manifested only after the formation of a specific immune response. Thus, the maximum therapeutic effect should be expected in case of A and P mixture application.

10.3

ANTIMICROBIAL ACTIVITY OF SYNTHETIC ANALOGUES OF CAPRINE PEPTIDES BACTENECINS TOWARDS DRUG-RESISTANT BACTERIA

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Antimicrobial peptides (AMPs) of the innate immune system are unique molecules, providing human and animals host defense, and prototypes of novel drugs to fight...