Materials and Methods. We enrolled a total of 90 HIV-infected individuals aged 22-60 years who constituted the main study group. The controls were 49 immunocompetent volunteers of the corresponding age. To examine the seroprevalence of anti-diphtheria and anti-tetanus antibodies we performed ELISA testing using diagnostic test systems RIDASCREEN Diphtheria IgG and RIDASCREEN Tetanus IgG (R-Biopharm AG, Germany). Statistical processing was performed using the STATISTICA v.6.1 licensed software.

Results. Titers of anti-toxic antibodies in HIV-infected and immunocompetent adults were significantly different. So, the median for anti-diphtheria antibodies in HIV-infected individuals was 0.17 (0.09; 0.38) IU/ml, which was 6.1 times lower than in the control group: 1.03 (0.56; 1.27) IU/ml (p<0.001 by Mann-Whitney U-test). The median of anti-tetanus antibodies in the main group was 0.59 (0.28; 1.09) IU/ml versus 1.33 (1.13-1.45) IU/ml in controls, showing 2.3-fold decline in the formers (p<0.001001 by Mann-Whitney U-test). The proportion of diphtheria-unprotected individuals was 93.3% (n=84) in the main group; the proportion of tetanus-vulnerable individuals—52.2% (n=47). There was no detectable association between the levels of antitoxic antibodies against diphtheria and tetanus and the number of CD4\(^+\) T-lymphocytes in HIV-infected adults.

Conclusions. HIV-infected adults are a high risk group for potential diphtheria and tetanus as they have low specific immunity level. This jointly with poor epidemiological situation in Ukraine justifies mandatory vaccination against the infections given and the necessity of a further evaluation of the state of immune protection against other vaccine-preventable diseases such as measles in this cluster of population.

References.

Key words: HIV, diphtheria, tetanus, seroprotection, immunization

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CHANGE OF SHORT CHAIN FATTY ACIDS LEVEL IN COLON CANCER IN DEPEND FROM LOCALISATION OF TUMOR

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Short chain fatty acids (SCFA) stimulate the growth and renewal of mucosal cells, the formation of mucus, blood flow in the mucosa, increase the absorption of water and salts, regulate the acid-base balance, maintain microbial balance, block adhesion and inhibit the growth of pathogenic and conditionally pathogenic flora. Salts and esters of acetic acid participate in the supply of substrates of lipogenesis and energy supply of the epithelium, and also provide an antimicrobial effect, regulate pH, motor and secretory activity of the intestine [1]. Salts and esters of propionic acid regulate microcirculation in the mucous membrane and support trophic processes in it, participate in gluconeogenesis, and block the adhesion of pathogens to the epithelium [2]. Butyrate is an important factor in the regulation of proliferation and differentiation of the colon epithelium, which explains its anticarcinogenic activity [3]. The production of SCFA by colon microflora is one of the important mechanisms of self-regulation. The most effective method for the qualitative and quantitative determination of SCFA is...
a gas-liquid chromatography using capillary columns [4-6]. The aim of study was to determine the levels of SCFA in colon mucosa and cancer from different localization.

**Materials and Methods.** We analyzed the level of iso-butyrlic, acetic, butyric, iso-valerianic, valerianic, capronic and propionic fatty acids in colon cancer (sigmoid, rectosigmoid part, cecum) and normal colon mucosa by capillary gas-liquid chromatography (Chromatek-Crystal 5000.1). We chose isothermal mode with flame-ionization detection. Samples preparation was as follows: tissue (0.04-0.05 g) and 0.5 ml of saline solution were put in 2 centrifuge tubes. 0.1 ml of standard solution iso-butyrlic acid (0.5 mol/l) was added in one of tubes. Tissue samples was homogenized (Tissue Lyser) by wet method (with saline and iso-butyrlic acid solutions). Homogenized tissue was centrifuged at 5000 rpm for 10 minutes (Centrifuge-vortex SM-50) and 1 μl of it was taken for analysis.

**Results.** Iso-butyrlic (0.0040977), acetic (0.049887), capronic (0.1794406) and propionic (0.0109907) fatty acids were detected in normal mucosa of sigmoid. Only acetic (0.0542122) and propionic (0.1083117) fatty acids were found in sigmoid cancer tissue with a significant increase in propionic fatty acid level (by 10 times) compared with normal mucosa. Acetic (0.1010713), butyric (0.0123598), iso-valerian (0.014031), valerian (0.0051992), capronic (0.1042201) and propionic (0.0455637) fatty acids were detected in normal mucosa of rectosigmoid part of colon. Iso-butyrlic (0.3003679), acetic (0.2164674), butyric (0.0296478), capronic (0.0201376) and propionic (0.0574549) fatty acids were detected in cancer tissue of this localization. An increase in level of iso-butyrlic (by 30 times), acetic (by 2 times), butyric (by 2 times) and propionic (by 1.5 times) fatty acids was noted in tumor tissue as compared with normal mucosa. A lack of iso-valerianic and valerianic SCFA and a decrease in capronic fatty acid level (by 5 times) were discovered also in cancer samples. Iso-butyrlic (0.0205162), acetic (0.0979105), butyric (0.0239409), iso-valerian (0.017809), capronic (0.2313114) and propionic (0.1187406) fatty acids were found in normal mucosa of cecum. Only iso-butyrlic (0.0273498), acetic (0.036056) and propionic (0.0130912) fatty acids were detected in cecum cancer samples. A lack of butyric, iso-valerianic and capronic SCFA and a decrease in propionic (by 10 times) and acetic (by 3 times) fatty acids levels was noted in tumor tissue in compared with normal mucosa of cecum. Qualitative and quantitative composition of analyzed SCFA was different in samples of normal mucos of colon and cancer in depend from localization. A change in composition and level of SCFA in samples of tumor indicated a change in colon microflora activity in normal state and with carcinoma development.

**Prospects for further research.** Further study of SCFA composition and level in samples of colon mucosa and cancer of the same localization will allow us to determine a role of the intestinal microflora in the malignancy development.

**References.**


**Key words:** Short chain fatty acids, cancer.