

## MULTIPHYTOADAPTOGENE IMMUNOMODIFYING EFFECT OF LEUKOCYTE INTEGRINS EXPRESSION REGULATION IN CBA MICE WITH SPONTANEOUS HEPATOMAS

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Adhesive interactions between immune and cancer cells are significant for reducing the immune escape mechanism for tumors. The aim of this study was to investigate the leukocyte integrins LFA-1 (CD11a) and Mac-1 (CD11b) expressions on blood lymphocytes in males of CBA inbred mice susceptible to spontaneous hepatomas as well as their regulation by multiphytoadaptogene phytomix-40 (phm-40) under different schemes of administration. Phm-40 consists of components from forty medical herbs extracts. Phm-40 develops wide spectrum of activities including antitumour and immunomodifying effects. The mice of the 1-st group (n=90) were control animals. The mice of the 2-nd group (n=40) were given 10% phm-40 solution in drinking water during the first month of life including the final time period of liver differentiation (as preventive application). The mice of the 3-d group (n=40) were given 10% phm-40 solution in drinking water starting at the 6-th month of mouse age (when the first carcinomas are generated) by 3 weeks courses with 1 week intervals (as therapeutic application).

Immune cells were analyzed by quantifying the expression of CD11a and CD11b antigens using flow cytometric study. There were no significant differences between parameters evaluated in all groups at the ages of 4 and 8 months. In the control group of animals LFA-1 and Mac-1 expressions were decreased down to  $35,4 \pm 1,6\%$  and  $7,8 \pm 1,0\%$  correspondingly ( $p_{8-22} < 0,01$ ) at the age of 22 months. Parameters alterations observed can suppress adhesive interactions between immune effectors and tumour cells. At the same time in the 2-nd and 3-d groups (preventive and therapeutic phm-40 administrations) LFA-1 ( $40,7 \pm 1,9\%$  and  $42,3 \pm 2,9\%$  correspondingly) and Mac-1 ( $11,5 \pm 1,1\%$  and  $12,8 \pm 1,7\%$  correspondingly) expressions were higher than parameters in control group ( $p=0,05$ ) at the age of 22 months. The results suggest the upregulation of the blood lymphocytes level with leukocyte integrins is due to the elevation of adhesive ligands (ICAM-1, 2) in tumours for immune effectors which can kill cancer cells enhancing the organism antitumor inspection.

## MULTIPHYTOADAPTOGENE PREPARATION REDUCED IL-6 AND IL-10 SERUM LEVELS IN CBA MICE WITH SPONTANEOUS HEPATOMAS

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Cytokines are pleiotropic in their biological activities including the immune response. In recent years it is obvious that cytokines mediate immune and tumour cells interactions. Serum cytokines IL-6 and IL-10 as well as their regulation by multiphytoadaptogene preparation phytomix-40 (phm-40) under different schemes of administration were investigated in males of CBA inbred mice with high frequency of spontaneous hepatocarcinomas. Phm-40 consists of components from forty medical herbs extracts. Phm-40 develops wide spectrum of activities including antioxidant, antimutagenic, antitumour and immunomodifying effects. The mice of the 1-st group (n=90) were control animals. The mice of the 2-nd group (n=40) were given 10% phm-40 solution in drinking water during the first month of life including the final time period of liver differentiation (as preventive application). The

mice of the 3-d group (n=40) were given 10% phm-40 solution in drinking water starting at the 6-th month of mouse age (when the first carcinomas are generated) by 3 weeks courses with 1 week intervals (as therapeutic application). Serum cytokine concentrations were determined by enzyme-linked immunosorbent assay. There were no differences between parameters evaluated in animals of all groups at the age of 4 and 8 months. The IL-6 and IL-10 serum concentrations in control animals were elevated significantly (to  $139,1 \pm 6,6$  pg/ml and  $60,9 \pm 3,9$  pg/ml correspondingly,  $p < 0,01$ ) at the age of 22 months. However IL-6 and IL-10 serum levels in the 2-nd and the 3-d groups were lower at the age of 22 months than in young animals ( $p < 0,05$ ). Thus early short-term preventive as well as prolonged therapeutic phm-40 administrations lead to reducing IL-6 and IL-10 serum levels. Decrease