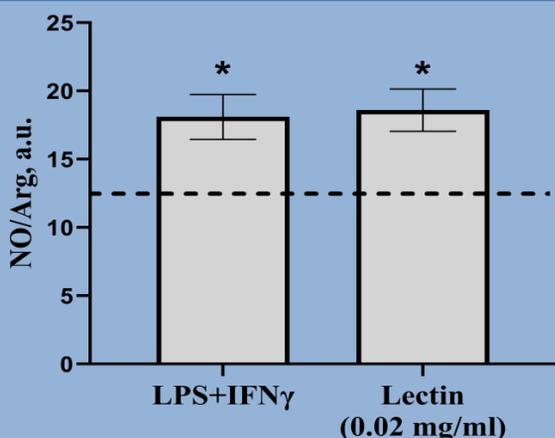


# CHANGES IN THE INTACT MICE MACROPHAGES` POLARIZATION BY THE INFLUENCE OF *BACILLUS SUBTILIS* IMV B-7724 LECTIN

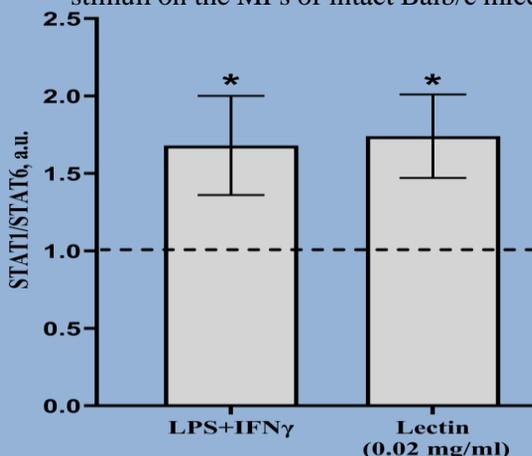
Chumak A., Shcherbina V., Fedosova N.

R.E. Kavetsky Institute of Experimental Pathology, Oncology and Radiobiology of NAS of Ukraine, Kyiv, Ukraine

- **Introduction.** Macrophages (MFs) are highly plastic cells that are able to rapid change their functional activity (polarization) upon external stimuli and thus perform their functions in both physiological and pathological processes such as tumorigenesis. There are M1 and M2 types of MFs activated by classical or alternative ways that reflect pro- or anti-inflammatory features respectively. Considering that the M1/M2 ratio determines the anti-tumor or pro-tumor strategy of MFs` behavior finding ways to regulate the MFs` polarization is important area of research.
- **The aim of study** was to investigate the effect of *B. subtilis* IMV B-7724 lectin on the MFs` polarization of intact Balb/c mice .
- **The study was performed on** MFs of Balb/c mice that was treated with 0,02 mg/ml of *B. subtilis* IMV B-7724 lectin *ex vivo* during 24h with further definition of NO/Arg production and mRNA STAT1/ STAT6 expression ratios. Cultivation of MFs with 20 ng/ml of IFN- $\gamma$  and 100 ng/ml of LPS during 24h served as control of MFs` polarization to M1 type.



**Fig. 1.** Changes in the NO/Arg ratio under the action of different stimuli on the MFs of intact Balb/c mice .



**Fig. 2.** STAT1/STAT6 ratio in MFs under the action of different stimuli.

**Results.** Complex influence of LPS and IFN $\gamma$  caused increasing in the NO/Arg (Fig.1) ratio up to 1.3 times compared with the same index in the intact mice, that is characteristic of the M1 phenotype. The similar changes of the NO/Arg ratio were observed in MFs after their treatment only with lectin (up to 1.4 times higher compare to intact control). Similar to the NO/Arg ratio, the assessment of the M1/M2 polarization direction was assessed by the STAT1/STAT6 mRNA ratio. The same changes in STAT1/STAT6 mRNA expression levels` ratio was noted between Balb/c mice MFs co-cultivation with lectin or with LPS+INF- $\gamma$  compare to intact mice (up to 1.7 times) (Fig.2) .

**Conclusions.** Effect of low concentration of *B. subtilis* IMB B-7724 lectin is similar to that observed after LPS and IFN- $\gamma$ ` complex action and cause the MFs` polarization to the M1 type.

Dashed line illustrates intact control. \* $p < 0.05$  compared with intact control