ABSTRACT

Metastasizing is responsible for 90% of death in cancer patients. Metastatic tumour cells have several strategies that they use to invade surrounding tissues - they can migrate together or individually. When individual cells migrate, tumour cells adopt two different morphologies. They are either elongated and migrate using the proteolytically active mesenchymal mode, or they are rounded and migrate in the amoeboid mode. Metastatic tumour cells can switch between these modes, which complicates the development of effective migrastatics. In this work, we focused on the effect of inflammatory signalling on metastatic cell migration. We worked with cell lines of malignant human melanoma, which adopt a mixed morphology and show both amoeboid and mesenchymal phenotype during migration. Upon stimulation of melanoma human cells with interferon beta, a mesenchymal to amoeboid transition occurs. Interferon beta appears to induce amoeboid morphology by maintaining high levels of the ISGF3 complex, which is composed of the heterodimer of STAT 1 and STAT 2 proteins and the IRF9 protein. Upon blocking of Jak / Stat signalling pathway by negative regulators, human melanoma cells return to mesenchymal morphology.

Key words – invasiveness, mesenchymal-ameboid transition, interferons, inflammation, migration, metastases