# Molecular chaperons-related studies using latent stages of invertebrates exposed to space environment

O. Gusev (1,2), V. Alekseev(3), M. Saigusa (2), T. Okuda (4) and V. Sychev (5)

1) Kazan University, Kazan, Russia, (2) Okayama University, Okayama Japan, (3) Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia, (4) National Institute of Agro-biological Sciences, Tsukuba, Japan, (5) State Scientific Center of Russian Federation, Institute of of Medico-biological Problems, Moscow, Russia (ogusev@mail.ru; dns16401@cc.okayama-u.ac.jp)

The latent stages of certain groups of invertebrates, such as Artemia and Daphnia cyst (Crustacea), tuns of water bears (Tardigrada) are very perspective material for the investigation of the boundaries of the survival of the living organisms in the space environment. While the number of authors showed that exposition the space flight causes the alteration in the survivability of the Artemia cysts, there is no data about the changes in the stress response on the molecular level after short and long-termed space flight. In this report we present preliminary results of the analysis of the expression of hsp90 chaperon in response to the heat shock in the larvae of the Artemia obtained from the cyst exposed to the real space flight onboard ISS for 1 and 6 month (in the frame of the “Aquarium” program 2005-2006) and control ground group. The perspectives of the usage of the molecular chaperons (hsp) in the studies for elucidation of the influence of the open space environment (“BIORISK” and “EXPOSE” research programs) on the immune response end general physiology of the invertebrates in their latent stages are discussed.