

Since the discovery of heat shock proteins in 1960s and their immunogenic properties 20 years later in 1980s they have been under rigorous investigation with great hopes for advent of immunotherapy in oncology as well as other pathologies. So are the HSPs a breakthrough in therapy of cancers or will they be just another form of palliative treatment of these notorious and deadly diseases?

HSPs is a family of proteins expressed virtually by all living organisms. These proteins have a number of functions that are crucial to organism's intracellular and extracellular homeostasis. Due to the significance of HSPs, over the eons of the evolution, they have been highly conserved in our genetic code. The human HSPs shares almost 50 percent homology with simple unicellular prokaryotes to well over 95 percent homology with higher species of living organisms.

Despite of the fact that HSPs have been known for approximately 50 years and despite of the intensive research in the field, currently Russia is the only place where HSP immunotherapy has been approved as of 2008 for treatment in renal cell carcinoma.

The HSPs immunotherapy has proven beneficial as an adjuvant treatment in some stages of a selected cancers. The advantage of HSPs immunotherapy is that it has less side effects compared to standard chemotherapy although. Nevertheless, the HSPs immunotherapy doesn't offer a radical cure. There are other attempts to use assess HSPs in infectious diseases as well as in some degenerative and autoimmune diseases. Although the research in the last two is still far from being conclusive.