

# Deep Hyperthermia In Oncology

**Prof. Dr. Andras Szasz, PhD<sup>1</sup>**

(1) Biotechnics Department, St. Istvan University, Hungary

## ***Introduction***

Hyperthermia was one of the very first medical approaches. It was based on various religions and had deep philosophical roots in most of the ancient cultures. It was one of the popular “kitchen medicines” having various heating methods vivid in cultural wisdom of various societies. Probably this simplicity and natural character was one of the factors why the long history was not enough for its serious medical consideration despite the actually widely applied household techniques. Oncological hyperthermia (overheating the body partly or completely) was definitely the very first oncotherapy in human medicine. The general professional skepticism blocked its application for a long time.

## ***Clinical realization***

The main problematic point is the late start of clinical use of local hyperthermia for patients. The reason is the present protocols in oncology requesting to apply the “gold standards” (surgery, chemotherapy, radiotherapy) and their combinations until these are effective. In this point the patients start local hyperthermia late, when the curative phase is over, normally only palliation is possible. However, there is a local hyperthermia method, modulated electro-hyperthermia, (nanothermia or its popular name oncothermia), which is able to act curatively even in these late phases of the disease. Moreover, it could act systemically, reestablishing the homeostatic equilibrium of the body. Its synergy with immune-associated therapies like the traditional Chinese medicine (TCM) is proven in the labs and in clinical practice too.

## ***Results***

In laboratory use we had directly proven the great synergy of TCM herb treatment with oncothermia. The clinical results are also well supporting these preclinical indications. Presently oncothermia has 62 clinical trials altogether including more than 3700 patients from five countries (Germany, Hungary, Italy, S. Korea, China). These trials over 19 lesions: Bone (metastatic); Breast; Colorectal; Gliomas; Head & neck; Brain (metastatic); Kidney; Liver (metastatic); Lung (NSCLC); Lung (SCLC); Pancreas; Cervix; Ovary; Prostate; Soft-tissue sarcoma; Stomach; Urinary-bladder; Uterus. Average number of patients in the studies is 53, by lesions 116. Maximal patient number is a study (Phase III) was 311 (NSCLC). The average oncothermia enhancement ratio (ratio of the median survival of responders to non-responders) was 5.1. The comparison with the large databases was made in multiple clinics relations, showing extremely large (minimum 20%) enhancement of the 1<sup>st</sup> year survival percentages. Most of the treatments use immune-supporting therapies and the success is probably promoted by this supportive care too.

## ***Objective***

Our objective is to analyze the problems and present a solution by the electromagnetic mechanisms for effective hyperthermia in oncology, and show the clinical results by nanothermia (modulated electrothermia). This emerging method (popularly named oncothermia) is a presently applied in 28 countries in all the five continents of the world.

## ***Conclusion***

Oncothermia is a feasible treatment for oncology. Its results show the possibility to make curative treatment in high line applications when usually only palliation is applied. Its synergy with TCM is one of the most exciting tasks of future research.

## ***Keywords***

Deep hyperthermia, oncology