



**THERMOSURGERY
TECHNOLOGIES, INC.**

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THE TECHNOLOGY

Thermosurgery has developed the ThermoMed™, a portable, hand-held device that delivers precisely controlled localized radio frequency to a small area of tissue. While based on the technology originally developed at Los Alamos National Laboratory, many advancements have been made to incorporate the latest technology.

ABOUT THE TREATMENT

The ThermoMed treatment. is a sophisticated application of a simple principle long known in the medical field that unhealthy or diseased cells cannot tolerate heat.

The device works by transmitting radio frequency through your skin to agitate your cells, which in-turn generate heat at the cellular level. The device precisely monitors the heated tissue within narrow temperature parameters. Because abnormal and diseased cells cannot tolerate the heat, the cells die. The surrounding healthy cells are minimally affected because the temperature is within a tolerable range. In addition, to the death of the diseased cells, the immune system is provoked and promotes in the healing of the treated area.

This device has shown excellent results in the treatment of various common skin lesions, both benign and malignant and has FDA market approval:

Acrochordon / Actinic Keratoses / Angioma / Atypical Mycobacteria / Clavus / Cystic Acne / Dermatophytosis / Epidermoid Cysts / Fibroma / HPV/Warts / Hydrocystoma / Keloids / Cutaneous Leishmaniasis / Molluscum Contagiosum / Seborrheic Keratoses / Basal Cell Skin Cancer / Syringoma

Patient benefits include: high cure rates, non-surgical treatment, excellent cosmetic results



HISTORY OF HYPERTHERMIA

For millennia, mankind has recognized the therapeutic benefit of using thermal baths to raise the body's temperature as a means of treating malignant and infectious diseases. However, the foundation of modern hyperthermia can be traced to work that dates back approximately 100 years.

HISTORY OF HYPERTHERMIA

In the late 19th Century, physicians and scientists began studying the curative effects of hot mineral waters and concluded that its physiologic effects upon the body were responsible for the cures witnessed. These observations formed the basis for hospital-based treatment regimes, where temperature and duration (thermal load) of heated local water was matched to the diseases treated. Around the same time, a number of physicians noted complete regression of tumors after an afflicted patient contracted a febrile (fever-inducing) disease and led to a 1927 Nobel Prize for Dr. Julius Wagner-Jauregg.

These results led to clinical trials that demonstrated heat to be a successful treatment for several diseases - but progress in the use of hyperthermia stalled with the discovery of penicillin. Interest was reawakened in the 1960s when it was shown that hyperthermia combined with other treatment modalities yielded markedly improved results. A number of well-controlled, randomized studies comparing hyperthermia plus radiation to radiation alone have demonstrated that the average complete response for radiation alone can be doubled by the addition of hyperthermia. Studies have shown similar results when hyperthermia is used in conjunction with chemotherapy.

Consequently, the use of hyperthermia - either at moderate temperatures as a therapeutic sensitizer or at higher temperatures as a method of ablating tissue minimally invasively or noninvasively - has increased significantly in recent years. Examples include brachytherapy, which combines heat with radiation seed implants, and heat therapy for the treatment of Benign Prostatic Hyperplasia (BPH). The use of hyperthermia for the treatment of other diseases, as well as for use in diagnostic areas, is being investigated.



SCIENCE OF HYPERTHERMIA

Biological studies have shown that there is an exponential relationship between exposure time and temperature needed for a given biological effect. In most biological systems, a temperature rise of 1°C requires halving the exposure time to achieve the same level of effect. This phenomenon is known as thermal dose.^{1, 2, 3, 4, 5} At certain thermal dose levels, abnormal tissue is affected differently from normal tissue. When heat is applied to normal tissue, blood vessels dilate, thus dissipating the tissue heat and preserving cellular integrity. Abnormal tissue, such as tumors and other conditions, has a different type of blood supply that is unable to diffuse the heat. Application of heat therefore results in a collapse of the vascular system and cell destruction.

- Several theories concerning the molecular biology of cell kill by hyperthermia have emerged.
- Molecular changes in the plasma membranes, cytoskeleton, and nucleus have been implicated.
- Significant increase in overall nuclear protein after hyperthermia (including the family of heat shock proteins [HSP] associated with inhibited DNA replication and DNA repair) results in instability of the genome, leading to cell mutations and death.
- The irregular tortuous capillary circulation of pathologic tissue is more sensitive to hyperthermia (above 41°C) and is unable to dissipate the heat as well as normal cellular circulation. As result, the intracellular Ph is lowered, thus pushing the affected cells into acidosis.⁶
- One of the fascinating focuses of current hyperthermia research is the evaluation of the immune stimulation effects of hyperthermia. There is an increased production of interferon alpha (IFN) and gamma along with heat shock proteins (HSP 72-73), which potentiates the anti-proliferation factors. Tumor necrosis factor (TNF) is also increased which further limits cellular proliferation and increases apoptosis.^{7, 8, 9, 10}



Before Treatment



*8 Weeks Post Treatment
Left Side*



*8 Weeks Post Treatment
Right Side*



SAMPLE CASE

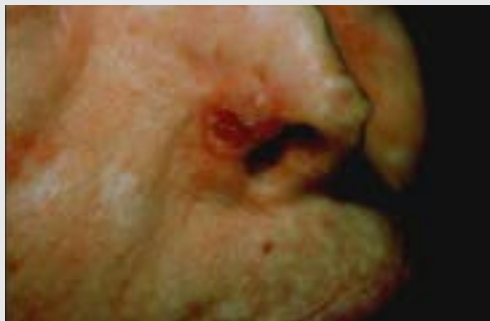
LEISHMANIASIS

*Treatment with the ThermoMed™ by Oscar Velasco, M.D., Mexico City
Patient: Female, Age 13; Cutaneous Leishmaniasis*

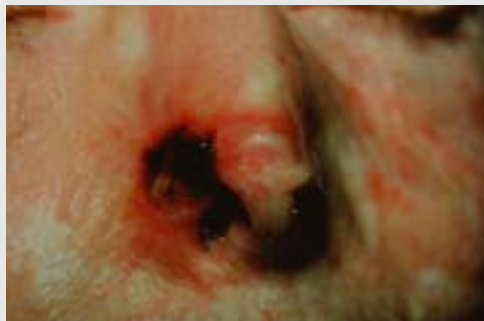
Multiple facial lesions that had not resolved after treatment with pentavalent antimonial treatment



Before Treatment



17 Days Post-Treatment



2 Months Post Treatment



SAMPLE CASE

BASAL CELL CARCINOMA

*Treatment with the ThermoMed™ by:
Alan c. Stormo, M.D., Certified, American Board of Plastic Surgery*



PAPER CITATIONS

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