

A new device for the local treatment of cutaneous leishmaniasis

The objective of this bachelor thesis was to develop a new device for the local treatment of leishmaniasis. Cutaneous leishmaniasis is a skin disease that occurs only in the poorer third-world countries, mainly South America, East Africa, Mediterranean and Asia. The disease is transmitted by mosquitoes and causes severe skin rashes. The disease is basically curable but is associated with high costs for the affected persons. The aim of this study is to provide the poorer people the opportunity to treat the disease by means of simple and affordable structural elements. One possible therapy is based on a thermal effect on the skin lesion. According to the WHO, local heating of the lesion to 50°C for 30 seconds is recommended.

In this study a heating resistor and a fan are used to heat the skin, similarly to using a hair dryer. Unlike the hair dryer, a microcontroller regulates the power at the resistor and consequently the temperature. A software P-controller was also implemented.

This report focuses on the technical aspects of the construction of this unit.

All requirements of this paper have been achieved with the methods implemented in the prototype.

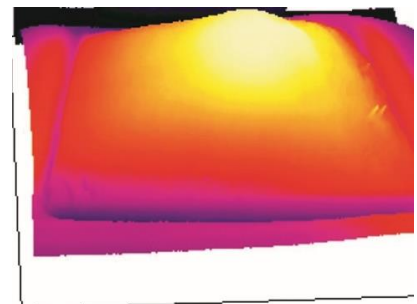


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The finished prototype is shown here.



The homogeneous irradiation of a surface can be seen in this picture. This is important for thermotherapy.