
EDITORIAL

Induced hyperthermia has used for long as a successful clinical treatment, particularly in oncology, within different scenarios. With the joint advances of medicine and technological sciences, the heating processes have achieved higher levels of control regarding specificity. This way, coming from the classical 'hot baths' whole body hyperthermia, we have nowadays moved to very precise regional and local hyperthermia protocols. This field is being continuously improved, pushed by different active research lines.

As a flagship, the use of specific nanoparticles has demonstrated to assist localized hyperthermia treatments in two ways. In certain cases, specific nanoparticles have improved the heating mechanism itself. On the other hand, inherent characteristics of nanoparticles have been used as indicators to map the temperature distribution on the tumour.

The benefits of using specific nanoparticles can be combined with chemotherapy schemes in hyperthermia based treatments. Being a promising field of research, several issues still need to be fixed as, for example, to reduce the toxicity and to increase the selectivity.

A straightforward way of increasing regional hyperthermia selectivity is to use as much as possible directive heating mechanisms. Microwave based hyperthermia allows to selectively increase the temperature of a particular tissue region, if appropriated applicators are used. Due to the inherent invasively nature of this approach, the numerical modelling of the mechanisms and devices emerges as an excellent tool in helping to the definition of these therapies.

Different cancers such us melanoma and colorectal cancer have taken advantages of these advances. Others are still waiting for additional studies, following these master lines.

This special issue tries to collect recent advances, analyse current trends and define new challenges in the use of regional and local hyperthermia, focusing on oncologic applications, within the scope of the nanomedicine.

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