Bioactive glass as a new approach in the treatment of bone cancer

A team of researchers at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) led by Prof. Dr. Aldo R. Boccaccini, Chair of Materials Science (Biomaterials) is producing bioactive glass that is being tested for suitability in the treatment of giant-cell tumours of the bone at Heidelberg University Hospital as part of a cooperation project. The cancer research foundation Deutsche Krebshilfe is funding the project with approximately 212,000 euros.

The tiny particles of glass that contain biologically active ions such as zinc, magnesium or boron are being examined to determine if they form carbonated hydroxyapatite (CHA) upon contact with bodily fluids. The formation of such a layer of CHA enables the particles of glass to interact with the bone tissue. The team led by Prof. Dr. Aldo R. Boccaccini is one of the world’s leading groups researching into the development, production and characterisation of bioactive glass.

In the treatment of broken bones, patients are already benefiting from the effects of bioactive glass, which stimulate bone growth. However, these types of glass can also have a destructive effect on cells and this is exactly what the researchers at Heidelberg University Hospital hope to make use of. Cancer cells from giant-cell tumours of the bone seem to react more sensitively than healthy bone cells. The aim is to selectively kill off cancer cells thus preventing local relapses or recurring tumours. Relapses occur relatively frequently in giant-cell tumours and can lead to a serious form of the disease. The researchers hope to improve treatments for cancer patients with the glass.

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