RECHERCHE

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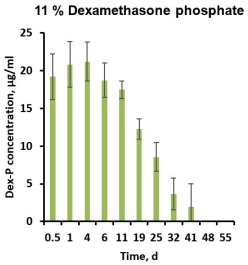
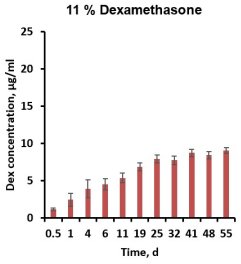
Dexamethasone-loaded cochlear implants: How to provide a desired "burst release"





Cochlear implants are used to transmit electrical signals into the inner ear of **patients suffering from severe or profound deafness**. However, their placement is invasive and can cause **trauma** as well as local inflammation, harming remaining hair cells or other inner ear cells. As foreign bodies, the implants also induce **fibrosis**, resulting in a less efficient conduction of the electrical signals and, thus, potentially decreased system performance.

To overcome these obstacles, **dexamethasone** has been incorporated into the implants, and its **release rate controlled over several years**. Dexamethasone does not only act against the immediate consequences of trauma, inflammation and fibrosis, it can also be expected to be beneficial for remaining hair cells in the long term. However, the amounts of drug released at "early" time points (during the first days/weeks) are relatively low and the in vivo efficacy is non-optimal.

To increase the initial "burst release" from the implants, a freely **water-soluble salt of a phosphate ester of dexamethasone** has been included.

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