

Biocompatible sulfated valproic acid-coupled polysaccharide-based nanocarriers with HDAC inhibitory activity.

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Abstract

The development of bio-based nanoparticles (NPs) as drug containers is of increasing interest to circumvent several obstacles in drug therapy such as rapid drug metabolism, short serum half-life, and unspecific side effects. The histone deacetylase inhibitor valproic acid (VPA) is known for its anti-inflammatory as well as for its anti-cancer activity. Here, recently developed VPA-loaded NPs based on cellulose- and dextran VPA esters were modified with sulfuric acid half ester moieties to improve intracellular drug release. The NPs show rapid cellular uptake, are non-toxic in

vitro and in vivo, and able to induce histone H3 hyperacetylation. Thus, they represent a potent drug delivery system for the application in a variety of treatment settings, such as inflammation, sepsis and defined cancer types. In addition, the flexible NP-system offers a broad range of further options for modification, e.g. for targeting strategies and multi-drug approaches.

Beteiligte Forschungseinheiten

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