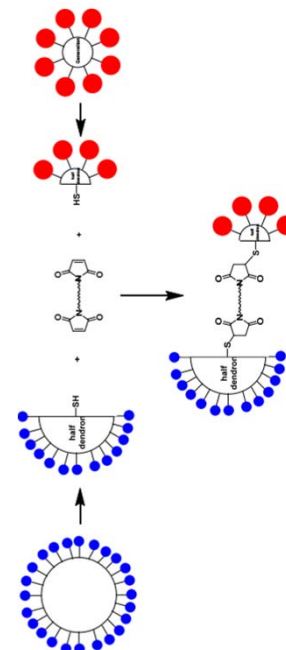


Multifunctionalized Asymmetric Dendrimers as a Platform for Drug Delivery and Imaging

This novel composition enables the production of multifunctional dendrimers that are consistent and scalable among batches.

Background

Poly (amido amine) (PAMAM) dendrimers are known as macromolecular carriers to deliver drugs, resulting in selective accumulation in tumor tissues due to EPR effect. The use of PAMAM derivatives with a cleavable cystamine core enables the assembly of different generations of half dendrons modified with different functionalities into single molecule. Dr. Ojima's group has invented novel asymmetric bow-tie PAMAM dendrimers, bearing a PEGylated bis-maleimido spacer, as the vehicles for tumor-targeting drug conjugates or tumor-diagnostic conjugates. The conjugates also include a triazine splitter to introduce a third arm to the conjugates for imaging. As examples, novel dendrimer-based drug conjugates, bearing a vitamin as the tumor-targeting module and a new generation taxoid as the warhead were synthesized.



Technology

This technology introduces novel multifunctional asymmetric bow-tie dendrimers as a robust platform for drug delivery systems as well as diagnostic agents. These novel dendrimers can be prepared from commercially available cystamine core Starbust® polyamidoamine (PAMAM) dendrimer in a practical manner. This invention also deals with the synthetic methodology/process for construction of such multifunctional asymmetric bow-tie dendrimers..

Patent number/Publication:

- PCT/US2014/054655
- Manuscript in review.

Advantages

- Construct the asymmetric bow-tie dendrimers for multifunctional dendrimer conjugates in a practical manner.
- Scalable, consistent among batches
- Robust platform for drug delivery and diagnostics

Applications

- Drug delivery
- Therapeutics
- Imaging
- Research

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