

Dextran-based single chain polymeric nanoparticles: synthesis, cytotoxicity and biodistribution in lungs

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Single chain polymer nanoparticles (SCPNs) are unimolecular soft nano-objects which can be obtained by controlled compaction of single polymer chains and gained interest in recent years due to their potential application in different fields, including nanomedicine.[1, 2, 3] However, most of the covalent strategies for the preparation of SCPNs suffer from the limitation of being performed at high temperatures, in the presence of metal catalysts and in organic solvents. We have recently patented a process for preparing water-dispersible SCPNs and conjugates containing those nanoparticles, as well as their use in biomedicine. [4]

In this poster, we present the synthetic methodology based on the intramolecular cross-linking (compaction) of single dextran polysaccharide chains by means of a bi-functional spacer (cross-linker) in water and mild conditions (r.t. and absence of catalysts). The incorporation of carboxylic acid at SCPN surface allows the functionalization with (bio)molecules, such as NODA chelating agent which has been used to successfully label the SCPNs with ⁶⁷Ga radionuclide. Preliminary cytotoxicity and biodistribution studies in healthy rats will be showed.

References

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Acknowledgements

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 604434.