



Lipoic acid as a linker to Auranofin analogue on nanocellulose

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Cellulosic nanomaterials have stimulated interest in the scientific community due to their peculiar properties that make them particularly promising among nanostructured materials. Nanocellulose-based materials are naturally available, from waste materials, at low price and are, generally, characterized by a high biocompatibility.¹ Moreover, nanocellulose can be easily functionalized to produce materials with new properties and applications.^{2,3}

In this work we focused on the use of nanocellulose as a drug delivery support. Our aim is the functionalization of nanocellulose crystals with lipoic acid.

Lipoic acid will be used for the grafting of the pharmacophore of Auranofin, the gold complex Et_3PAuCl . As well, the presence of a glucose unit linked by a short PEG chain will enhance the selectivity of internalization in tumour cells.

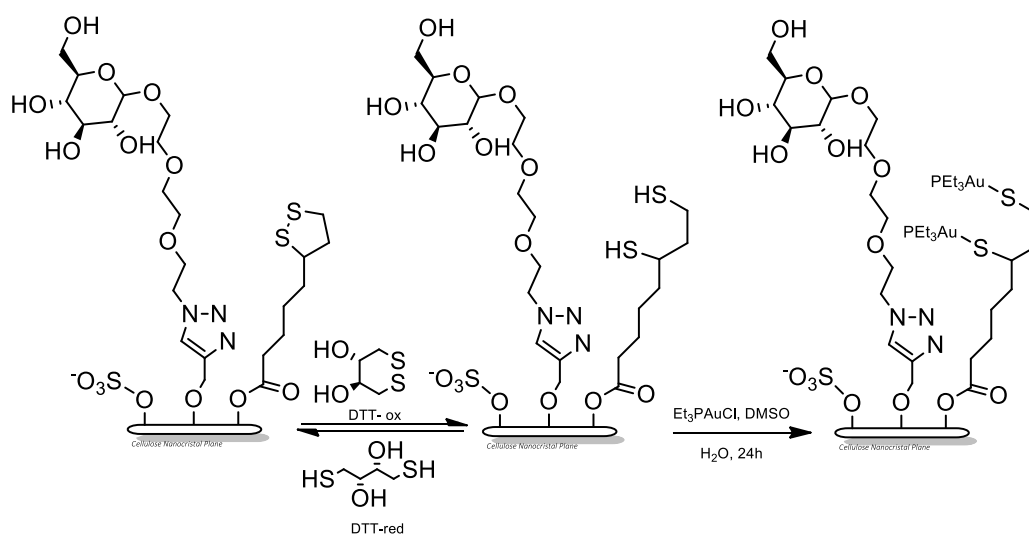


Figure 1. functionalization of the nanocellulose drug support.

References

- [1] B. Thomas, M.C. Raj, J. Joy, A. Moores, G.L. Drisko, C. Sanchez, *Chem. Rev.*, **2018**, *118*, 11575-11625.
- [2] G. Biagiotti, G. Toniolo, M. Albino, *Nanoscale Horizons*, **2023**, *8*, 776 – 782.
- [3] G. Biagiotti, R. Cazzoli, P. Andreozzi, *Nanoscale Horizons*, **2024**.

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