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THIOL-ENE POLYMERISATION: A PROMISING TECHNIQUE TO OBTAIN NOVEL BIOMATERIALS

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ABSTRACT

Thiol-ene reactions have been utilised for surface functionalization, molecules conjugation, crosslinking, grafting, and polymerisation of renewable monomers. The applications described in the literature comprise utilisation as protective polymers, photo-curable materials, highly uniform glasses, elastomers, adhesive and even dental restorative resins. Even though novel materials are arising from thiol-ene chemistry, little attention has been paid to the potential biomedical applications, which these materials possess. Some applications have been researched for thiol-ene polymers in the past few years within the biomedical field, mostly as hydrogels. These polymers have been successfully synthesized comprising different kinds of multifunctional enes and thiols. Functional groups of interest are those which yield polymers that present hydrolysable bonds in the polymeric chain such as ester group. However, there is a lack of information available in the literature regarding biocompatibility and biodegradability of thiol-ene polymers, and their utilisation in tissue engineering, drug delivery or dental restoration. Thiol-ene polymers as biomedical materials is a field still underexplored, not many papers have been published under this subject even though there are many advantages in using these materials.

Keywords: thiol-ene polymerisation, biomaterials, poly(thioether-ester), hydrogels, polymer particles, dental resins.

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