

Supramolecular Peptide Hydrogels: Exploring the Role of Dehydroamino Acids

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In the last decades, supramolecular hydrogels, composed of amino acids and peptides, have revolutionized the field of biomaterials by providing unique advantages, including biological origin, bioactivity, biocompatibility, and biodegradability. These peptide-based hydrogels are particularly valuable in biomedical applications due to their low critical gelation concentration (CGC), which enhances efficiency, cost-effectiveness, and minimizes cytotoxicity. The inclusion of dehydroamino acids in the sequence of peptide hydrogelators endows them with proteolytic resistance and promotes self-assembly due to the conformational constraints in the peptide backbone introduced by the double bond. In this communication a library of peptide hydrogelators incorporating dehydroamino acids will be presented exploring the self-assembly characteristics of these dehydropeptides, focusing on their gelation behavior, mechanical properties, and responsiveness to external stimuli. The incorporation of dehydroamino acids imparts unique chemical properties to hydrogelators, resulting in improved stability and functionality, thereby making them promising candidates for various applications, including drug delivery.

References: