

Poster Presentation

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Synthesis of polytriazolyl glycine pseudo-polypeptide using topochemical azide-alkyne cycloaddition

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The demand for peptidomimetics with isosteric amide surrogate groups has been escalating recently as they often have satisfactory properties than the parent peptides. Among the popular isosteres for amide, triazole has been recognised for its biocompatibility. We have synthesised a new polytriazolyl pseudo-polypeptide of the simplest and the only achiral natural amino acid glycine, via catalyst-free and solvent-free Topochemical Azide-Alkyne Cycloaddition (TAAC) reaction. Glycine dipeptide I (N³-Gly-Gly-NH-CH₂-CCH) and tripeptide II (N³-Gly-Gly-Gly-NH-CH₂-CCH) were synthesised and crystallised. Single Crystal XRD analysis of both the peptides revealed an arrangement where, the peptide chains cross one over the another in the alternate layers, with the reacting azide and alkyne moieties placed at proximity through a head to tail arrangement. Both the peptide crystals underwent spontaneous polymerisation resulting in triazole linked pseudo-polypeptide.

(a) Krishnan, B. P. et al. (2016). J. Am. Chem. Soc. 138, 14824–14827.

(b) Krishnan, B. P. & Sureshan, K. M. (2017). J. Am. Chem. Soc. 139, 1584–1589.

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