

Sulfide-Mediated Peptide Ligation in Water

Category

Peptide Chemistry

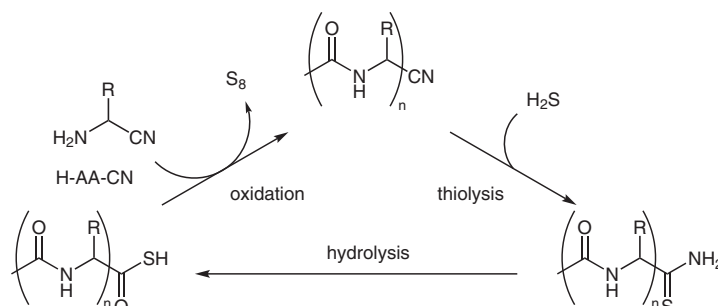
Key words

peptide ligation
 aminonitriles
 hydrogen sulfide
 thioacetates
 ferricyanides
 aqueous media

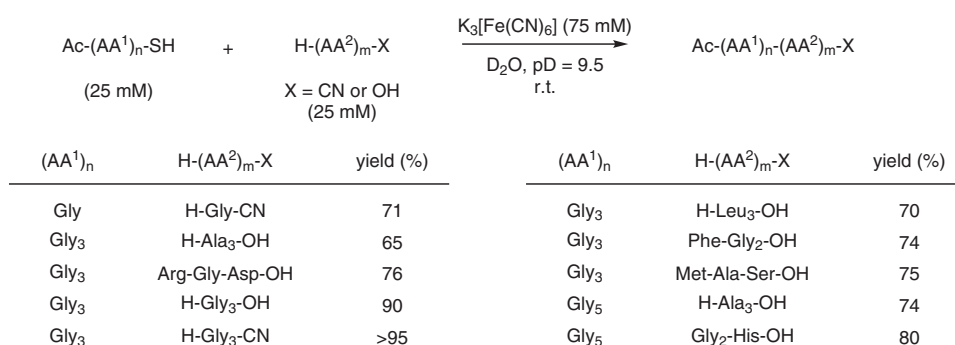
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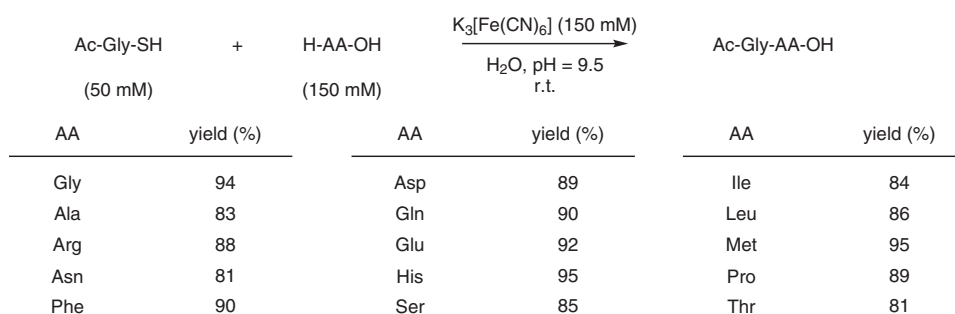
Ligation cycle:



Synthesis of oligomeric *N*-acetyl peptides and peptide nitriles by oxidative fragment ligation:



Synthesis of *N*-acetyl dipeptides:



Significance: This work provides a method for achieving α -peptide ligation in water that tolerates all 20 proteinogenic amino acids. This is extremely important, especially in biochemistry and the life sciences.

Comment: The authors have developed a method for chemoselective α -aminonitrile ligation in water that uses prebiotically plausible molecules such as hydrogen sulfide, thioacetate, and ferricyanide. The α -peptides are obtained in good to high yields. The model suggests that short *N*-acyl peptides might have served as plausible substrates during the early evolution of life.