

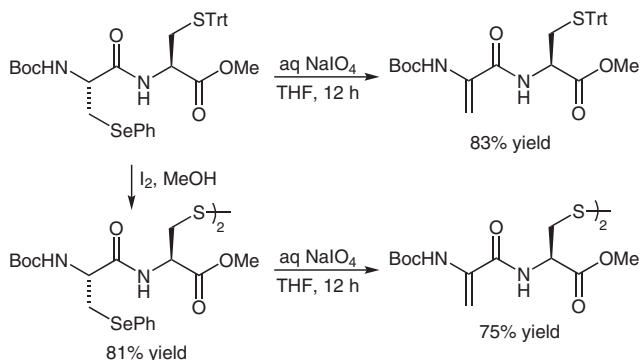
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Facile Chemoselective Synthesis of Dehydroalanine-Containing Peptides

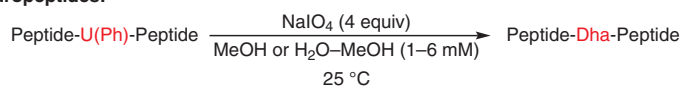
Org. Lett. 2000, 2, 3603–3606.

Synthesis of Dehydroamino Acid Containing Peptides

Chemoselective oxidation of peptides:



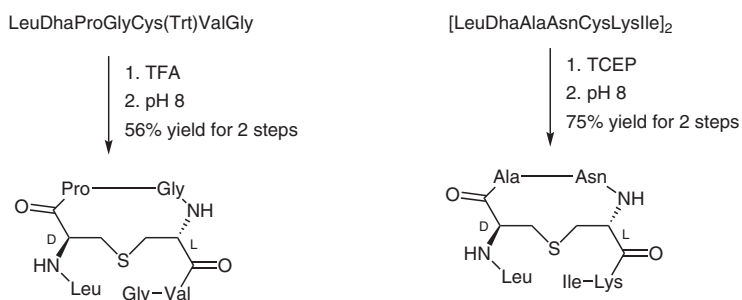
Synthesis of dehydropeptides:



Fmoc-GLPDhaVIA	Fmoc-ISVDhaRSTS	Ac-GLPDhaVIA	Ac-ISVDhaRSTS
72% yield ^a	67% yield ^b	82% yield ^a	82% yield ^a
		*(H ₂ O ₂ as oxidant)	
Ac-GGC(S <i>t</i> -Bu)PDhaVIA	LDhaPGC(<i>Trt</i>)VG	[LDhaAECKI] ₂	RIADhaALC(S <i>t</i> -Bu)K
84% yield ^b	80% yield ^b	33% yield ^b	72% yield ^b

U(Ph)-(Se)-phenyl selenocysteine; Dha-dehydroalanine; G-Gly; L-Leu; P-Pro; V-Val; I-Ile; A- Ala; S-Ser; R-Arg, T-Thr; C- Cys; E-Glu; K-Lys; ^a MeOH; ^b H₂O-MeOH

Synthesis of lanthionines:



Significance: The α,β -unsaturated amino acids dehydroalanine and dehydrobutyrine are present in various natural products and polypeptides. The authors have developed a method for the chemoselective synthesis of dehydroalanine (dha) residues by oxidative elimination of nonnatural amino acids.

Comment: Chemoselective, site-specific incorporation of dha residues into peptides was achieved by the oxidative elimination of Se-phenylselenocysteine. Furthermore, cyclic lanthionines were synthesized by intramolecular Michael addition of cysteine onto the Dha residues.