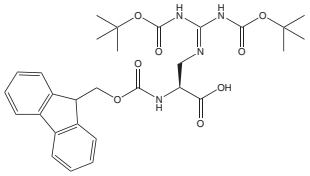
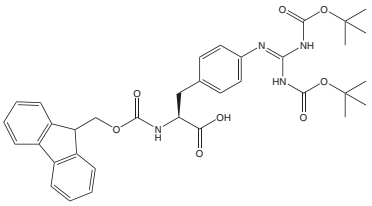
Novabiochem®
Letters: 3/11

NEW Arginine mimetics for Fmoc SPPS

Fmoc-Agp(Boc)$_2$-OH



Fmoc-Phe(bis-Boc-4-guanidino)-OH



Arginine is unique amongst proteogenic amino acids in that the basic side-chain guanidino group remains positively charged across all pHs found in biological systems. Arginine residues often play pivotal roles in mediating receptor interactions, protein-protein recognition and maintaining protein structure through salt bridge formation. Furthermore, many therapeutically relevant proteases display a preference for arginine residues in their endogenous substrates. Consequently, arginine mimetics are important tools

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EMD Millipore is a division of Merck KGaA, Darmstadt, Germany

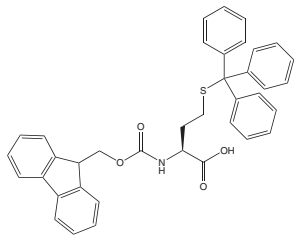
for studying the role of arginine in biological functions and for developing enzyme inhibitors as potential therapeutics.

The Novabiochem® brand is, therefore, pleased to expand our range of arginine analogs with the introduction of Fmoc-Agp(Boc)$_2$-OH and Fmoc-Phe-bis-Boc-4-guanidino)-OH. These derivatives are compatible with standard Fmoc SPPS methods. Removal of the side-chain Boc groups is effected during the course of the TFA cleavage reaction.

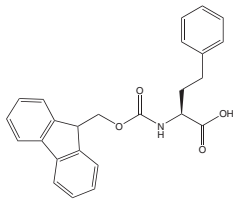
852336	Fmoc-Agp(Boc)$_2$-OH	1 g
NEW		5 g
852337	Fmoc-Phe(bis-Boc-4-guanidino)-OH	1 g
NEW		5 g
852267	Fmoc-homoArg(Pbf)-OH	1 g
		5 g

NEW Homo amino-acid analogs

Fmoc-hCys(Trt)-OH



Fmoc-hPhe-OH



We are pleased to offer Fmoc-hCys(Trt)-OH and Fmoc-hPhe-OH as the latest additions to our range of side-chain homologs of Fmoc-protected amino acids.

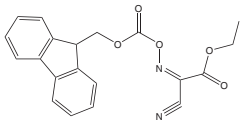
852266	Fmoc-hCys(Trt)-OH	1 g
NEW		5 g
852328	Fmoc-hPhe-OH	1 g
NEW		5 g

The Novabiochem® brand's other homo analogs:

852267	Fmoc-homoArg(Pbf)-OH	1 g
		5 g
852059	Fmoc-Hse(Trt)-OH	1 g
		5 g

NEW Fmocylation reagent

Fmoc-Oxyma



Features & Benefits

- Eliminates the formation of β-alanyl-related impurities during Fmocylation reactions
- Ideal for Fmocylation of hindered amino acids

The synthesis of Fmoc-protected amino acids using Fmoc-OSu has been found to lead to products contaminated with Fmoc-β-Ala-OH and Fmoc-β–Ala-Aaa-OH [1, 2], which arise through base-catalyzed ring opening of the succinimide moiety, followed by the Lossen rearrangement (Figure 1) and subsequent formation of β-alanine. Unfortunately, such impurities are almost impossible to remove and often the researcher has no choice but to use contaminated Fmoc-amino acids in peptide synthesis, which results in incorporation of unwanted β-Ala into their desired sequence.

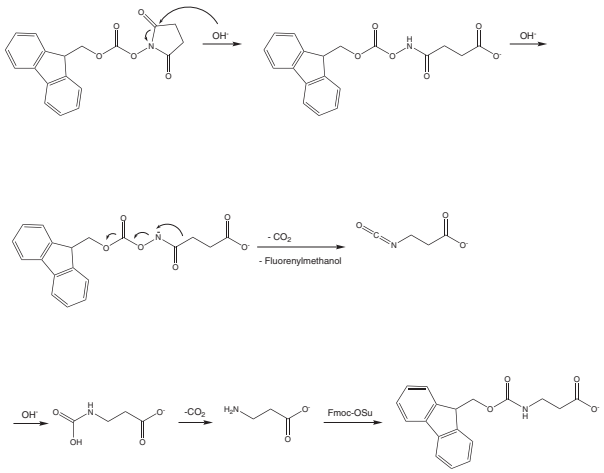


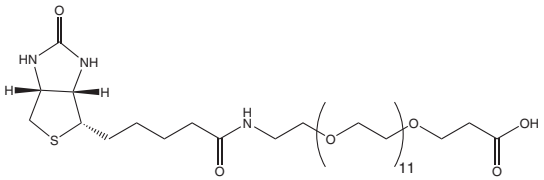
Fig. 1: Lossen rearrangement.

The problem is most serious with hindered amino acids such as Aib, where the formation of β-Ala related by-products has been observed to occur to the extent of 3.1 %. Fortunately, this problem can now be overcome through the use of the novel Fmocylation reagent, Fmoc-Oxyma [3]. This compound cleanly protects amino acids suspended in THF/water/Na_2CO_3 at 40 °C.

851094	Fmoc-Oxyma	5 g
NEW		25 g

NEW Bifunctional PEG building blocks

N-Biotinyl-NH-PEG$_{11}$-COOH



Features & Benefits

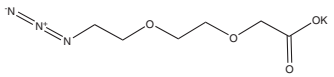
- Improves solubility of biotinylated peptide
- Reduces steric hindrance between biotin and peptide
- Compatible with standard Fmoc peptide synthesis protocols

N-Biotinyl-NH-PEG$_{11}$-COOH is a new building block for the preparation of biotin-labeled peptides, which incorporates a hydrophilic 40-atom spacer. It is prepared from a highly-purified monodisperse PEG to ensure homogeneous products free from contaminating oligomers. In contrast to similar linkers based on polydisperse PEG, this reagent gives products that are single chemical entities which can be characterized and purified using standard techniques.

N-Biotinyl-NH-PEG$_{11}$-COOH is particularly suited to the synthesis of hydrophobic biotinylated peptides, as the inclusion of the polar PEG spacer should significantly improve their solubility in aqueous buffer. The spacer also reduces steric hindrance between the peptide and avidin, leading to better biotin binding. Furthermore, the hydrophilic nature of the PEG should prevent the spacer group from becoming buried in the hydrophobic pocket of target proteins.

852340	N-Biotinyl-NH-PEG$_{11}$-COOH	250 mg
NEW		1 g
851029	N-Biotinyl-NH-PEG$_2$-COOH	500 mg
		1 g

N$_3$-PEG-COOK (8 atoms)



Features & Benefits

- Introduced using standard activation methods
- Compatible with Fmoc SPPS
- Terminal amine unmasked by reduction with phosphines or thiols

N$_3$-PEG-COOK is the latest addition to the Novabiochem®brand's range of PEG-based building blocks for solid phase peptide synthesis. It can be introduced using standard coupling methods, such as PyBOP®or HBTU, and is compatible with TFA cleavage protocols, provided thiols are omitted from the cocktail [4]. Reduction of the azido group to an amine can be effected using phosphines [5, 6], thiols [7] or $SnCl_2$ [8].

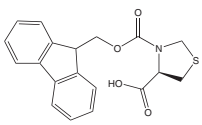
851205	N$_3$-PEG-COOK (8 atoms)	250 mg
NEW		1 g

The Novabiochem® brand's other azido derivatives:

851021	N$_3$-PEG$_7$-COOH (33 atoms)	1 g
851097	ε-Azidocaproic acid	1 g
		5 g
852320	Fmoc-L-β-azidoalanine	100 mg
		500 mg
852321	Fmoc-L-γ-azidohomoalanine	100 mg
		500 mg
852322	Fmoc-L-δ-azidonorvaline	100 mg
		500 mg
852326	Fmoc-L-ε-azidonorleucine	250 mg
		1 g

NEW Protected Cys derivative for NCL

Fmoc-Thz-OH



Features & Benefits

- Reagent for introduction of Thz residue
- N-terminal Thz residue can be converted to cysteine by treatment with methoxyamine

Fmoc-Thz-OH is a building block for the intoduction of thiaproline (Thz) during Fmoc SPPS. Thz has been employed as a masked cysteine residue to prevent self-ligation during native chemical ligation reactions (NCL) of peptide thioesters bearing an N-terminal Cys residue [9]. Once ligation is complete, the N-terminal Cys residue of the resultant peptide is unmasked by ring opening the Thz residue by treatment with methoxyamine, thereby enabling its subsequent ligation to another peptide thioester fragment.

852338	Fmoc-Thz-OH	1 g
NEW		5 g
		25 g

A selection of the Novabiochem® brand's other cysteine derivatives:

852006	Fmoc-Cys(Acm)-OH	5 g
		25 g
		100 g
852022	Fmoc-Cys(tButhio)-OH	5 g
		25 g
		100 g
852008	Fmoc-Cys(Trt)-OH	5 g
		25 g
		100 g

References

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