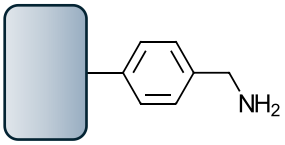
SABIT™ PS-DVB AM X2-C0.75

Material overview

SABIT-SPPS Resins are novel resins optimized for solid phase peptide synthesis made with novel resin technology. There are several variants available with different cross-linking degrees (X) and levels of loading (C) – please inquire for alternate X and C variants.

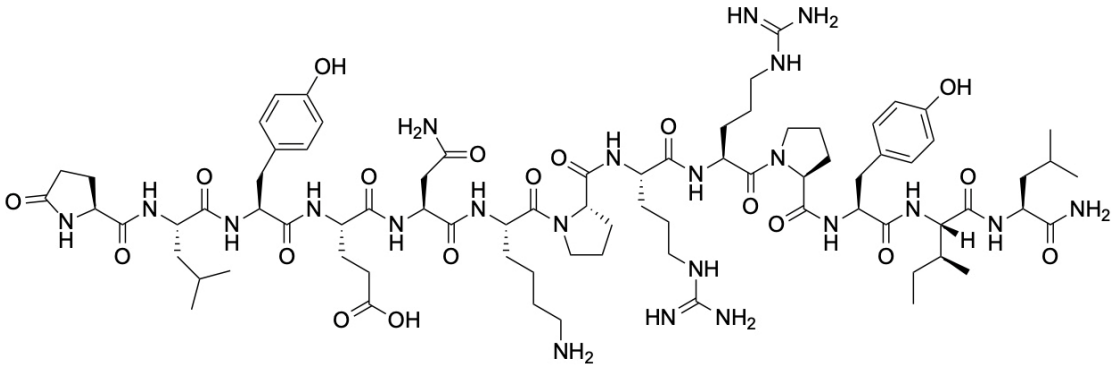
SABIT PS-DVB AM X2-C0.75 properties	
Resin matrix	DVB/Styrene
Resin x-link (X)	2% DVB
Particle size	75 - 150 µm
Functionality	Aminomethyl AM
Loading (C)	0.75 mmol/g
Swelling in DMF	5,6 ml/g
Swelling in DCM	8 ml/g



Application example of Sabit PS-DVB AM X2-C0.75 using Neurotensin

Evaluation of the resins using Neurotensin and GLP-1 (more info below) was conducted at Lund University Sweden and at Copenhagen University, Denmark under supervision of Prof. Knud Jensen. See Link for more info.

Performance of SABIT PS-DVB AM X2-C0.75 is exemplified using Neurotensin (13 Amino acids: pyroGlu-Leu-Tyr-Glu-Asn-Lys-Pro-Arg-Arg-Pro-Tyr-Ile-Leu-NH_2) as a challenging model peptide.



Procedure

Steps of the synthesis: Swelling –> Rink Amide attachment –> Kaiser test –> Capping –> Fmoc-loading test –> Coupling –> Cleavage –> Prep HPLC –> LC-MS –> Freeze-drying –> LC-MS.

Redstone Separations AB
Lund, Sweden
www.redstone-sep.com

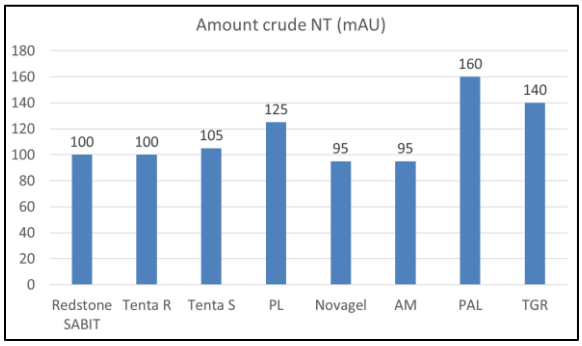
Standard peptide chemistry (HBTU/HOBt, 1.5 eq.) in DMF was used, with a resin amount to synthesize 25 µmol of Neurotensin using each time 1.2 mmol of Fmoc-Amino acid, done on a Biotage Syro I.

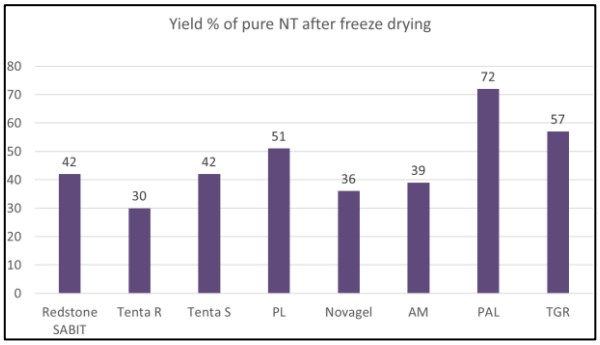
Redstone SABIT PS-DVB AM C2-0.75 resin was compared to 7 common commercial resins. Polymer Labs: PL-Rink; Rapp: TentaGel R RAM and TentaGel S RAM; Novabiochem: Fmoc-PAL AM, Rink Amide AM, NovaSyn TGR, Rink Amide NovaGel.

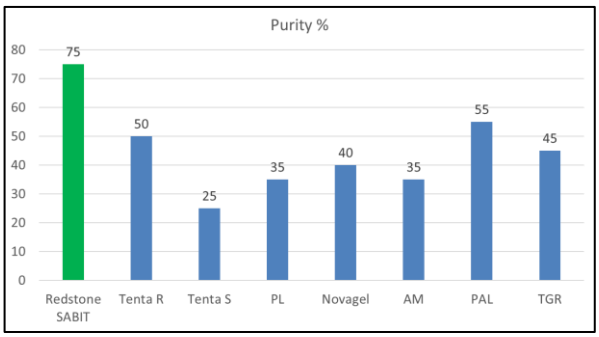
It should be stressed that only Polymer Labs PL-Rink and Novabiochem Rink Amide AM are based on cross-linked Polystyrene and thus chemically equivalent to Sabit PS-DVB AM X2-C0.7. The other tested commercial resins have PEG groups incorporated in the material. Further, all commercial materials had a cross-linkage of 1 %. Redstone SABIT PS-DVB AM X2-C0.75 has a cross-linkage of 2 %. The higher cross-linkage of the SABIT resin should lead to a lower swelling but an improved resin architecture and potentially better homogeneity might explain better swelling (TentaGel DMF = 4.4 ml/g, DCM = 6 ml/g). All commercial resins had a particle size of either 90 µm or 75-150 µm.

Results

Sabit PS-DVB AM X2-C0.75 had similar levels of crude amount and yields of synthesized Neurotensin as the compared commercial products.







Interestingly, at the last step, the purity was considerably higher for the SABIT resins compared to the tested commercial benchmark products. The improved performance might be due to the novel and more homogeneous resin structure.

Our first results suggest that these new products developed by Redstone Separations AB are promising as they are already well performing resins for solid phase peptide synthesis. Preliminary tests also showed that GLP-1 variants can be synthesized well on SABIT solid phase resins. More information later. Further improvements on Sabit resin properties may lead to even better performance.

As there might be an optimal resin for the most economical production of a specific peptide, Redstone Separations AB offers a service to develop tailor-made solid phase synthesis resins adapted to a specific peptide sequence to optimize production economics and potentially environmental

Contact info:
Email: info@redstone-sep.com
Direct phone: +46-738-156-130
Web: www.redstone-sep.com

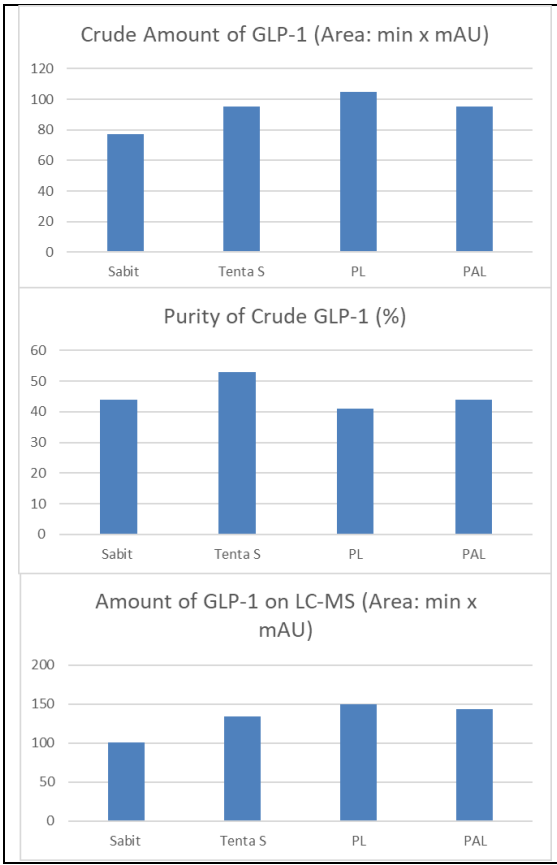
parameter and sustainability. Adaptations can be on optimizing cross-linkage, loading, back-bone chemistry, resin architecture, particle size or type of Linker.

Application example of Sabit PS-DVB AM X2-C0.75 using GLP-1

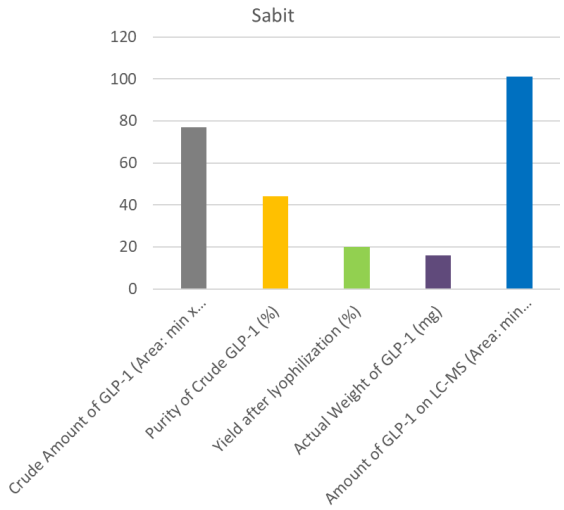
GLP-1 consists of a 30 Amino acids sequence: His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg-NH2.

GLP-1 was synthesized on a 0.025 mmol scale using SABIT PS-DVB AM X2-C0.75 using a Biotage Syro I instrument.

Results for GLP-1



SABIT resins produced a significant amount of GLP-1, demonstrating they can synthesize this peptide in good yield.



Purity and yield for SABIT SPPS resins are satisfactory and approach the performance of established SPPS products.

Evaluations of SABIT PS-AM X2-C0.75 for producing GLP-1 were conducted with satisfactory results. However, a lower loading of resin would have been more promising for this rather long peptide to avoid steric limitations.

In summary, SABIT solid phase peptide synthesis resins based on cross-linked Polystyrene are equivalent alternatives to current products on the market. As all synthetic steps of the resin are performed in-house, so we have exceptional control of the whole production process and can provide reliable and reproducible performance of our products.

Redstone offers also custom-made resin developments for dedicated applications. Please inquire.

For ordering samples, pls visit our web shop or order directly at order@redstone-sep.com.

Contact info:
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Web: www.redstone-sep.com