

S-Ribosylhomocysteine analogues modified at the ribosyl C-4 position.

Autorzy

Christiane Chbib
Adam J. Sobczak
Mukesh Mudgal
Cesar Gonzalez
Daniel Lumpuy
Justyna Nagaj
Kamila Stokowa-Sołtys
Stanisław F. Wnuk

Rok wydania

2016

Czasopismo

Journal of Sulfur Chemistry

Numer woluminu

37

Strony

307-327

DOI

10.1080/17415993.2015.1137921

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

4-C-Alkyl/aryl-S-ribosylhomocysteine (SRH) analogues were prepared by coupling of homocysteine with 4-substituted ribofuranose derivatives. The diastereoselective incorporation of the methyl substituent into the 4 position of the ribose ring was accomplished by addition of methylmagnesium bromide to the protected ribitol-4-ulose yielding the 4-C-methylribitol in 85% yield as single 4*R* diastereomer. The 4-C-hexyl, octyl, vinyl, and aryl ribitols were prepared analogously. Chelation controlled addition of a carbanion to ketones from the (*Si*-face) was responsible for the observed stereochemical outcome. Oxidation of the primary alcohol of the 4-C ribitols with the catalytic amount of tetrapropylammonium perruthenate in the presence of *N*-methylmorpholine *N*-oxide produced 4-C-alkylribono-1,4-lactones in high yields. Mesylation of the latter compounds at the 5-hydroxyl position and treatment with a protected homocysteine thiolate afforded protected 4-C-alkyl/aryl-SRH analogues as the lactones. Reduction with lithium triethylborohydride and successive global deprotections with TFA afforded 4-C-alkyl/aryl SRH analogues. These analogues might impede the S-ribosylhomocysteinase(LuxS)-catalyzed reaction by preventing β -elimination of a homocysteine molecule, and thus depleting the production of quorum sensing signaling molecule AI-2.

Słowa kluczowe

C-substituted ribose, Homocysteine, LuxS, S-Ribosylhomocysteine, ribonolactone

Adres publiczny

<http://dx.doi.org/10.1080/17415993.2015.1137921>

Plik został wygenerowany dnia 2026-04-30 09:42:50

Adres w repozytorium https://old.chem.uni.wroc.pl/pl/repozytorium/_yhsmS.