Azido group as regioselectivity and reactivity switch for modification of fused pyrimidines | Poster Board #3612

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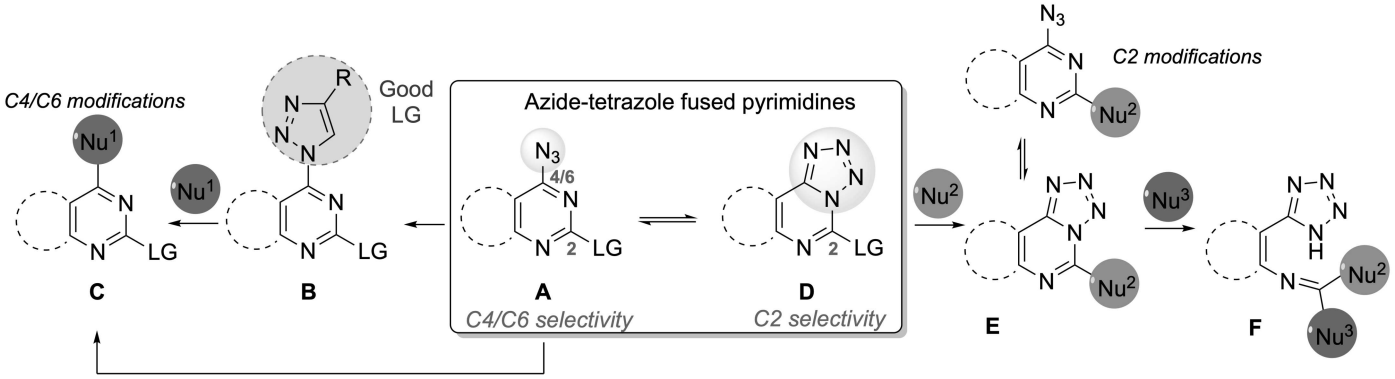
Information Resources

Recently, we have developed a new synthetic approach for the synthesis of 2,6-bis(triazolyl)purine derivatives and have proved that the triazolyl ring at C6 position of purine is acting as a good leaving group in aromatic nucleophilic reactions with *N*, *S*, *C*, *O* and *P*-nucleophiles (Scheme 1). In addition, we developed an approach for sulfonyl group migration from C6 position of purine via "sulfonyl group dance" to C2 position during S_NAr reactions with NaN_3 based on azide-tetrazole equilibrium. Further, we applied our developed methods to quinazolines and obtained a series of C2 and C4-thiosubstituted quinazoline derivatives.
In our present research, we have designed an approach for the ring-opening reactions of fused pyrimidines such as purines, deazapurines, and quinazolines using different nucleophiles and the presence of azide-tetrazole equilibrium in the structure (Scheme 1). In our case tetrazole ring is acting firstly as a protecting group, forcing the addition of nucleophiles at the less active C2 position of fused pyrimidine **D**, and secondly as a leaving group when under the second nucleophile attack, the pyrimidine ring opens, forming tetrazolyl derivatives **F**. The obtained structures are proved by X-ray analysis. Further opened products can be used as starting materials to synthesize diazepine-type structures.
In addition, we have investigated a method for synthesizing C5-substituted tetrazolopyridopyrimidines from 2,4-diazidopyridopyrimidines in S_NAr reactions with *N*, *O*, and *S*-nucleophiles. The tetrazolopyrimidine derivatives can be considered as 2-azidopyrimidines due to the present tetrazole-azidoazomethine equilibrium and functionalized in copper(I)-catalyzed azide-alkyne dipolar cycloaddition (CuAAC) and Staudinger reactions. In our group azide-tetrazole equilibrium of pyridopyrimidines is intensively studied in various solvents by NMR, and obtained monocrystals are studied by X-ray analysis. The synthetic routes toward fused pyrimidine opening products and substituted pyridopyrimidine derivatives will be discussed.



Scheme 1. General approaches toward modified fused pyrimidines using the presence of azide-tetrazole equilibrium.

Author(s):

- Kristaps Leškovskis
- Jānis Mikelis Zakis
- Zigfrids Kapilinskis
- Dinesh Kumar

- Anna Dozorina
- Jurijs Renars Verdins
- Anatoly Mishnev
- Prof. Maris Turks, Professor, Riga Technical University

Presenter(s):
- Irina Novosjolova

Division: [ORGN] Division of Organic Chemistry