Synthesis of novel trifluoromethylated azetidines, aminopropanes, 1,3-oxazinanes and 1,3-oxazinan-2-ones starting from 4-trifluoromethyl-β-lactam building blocks

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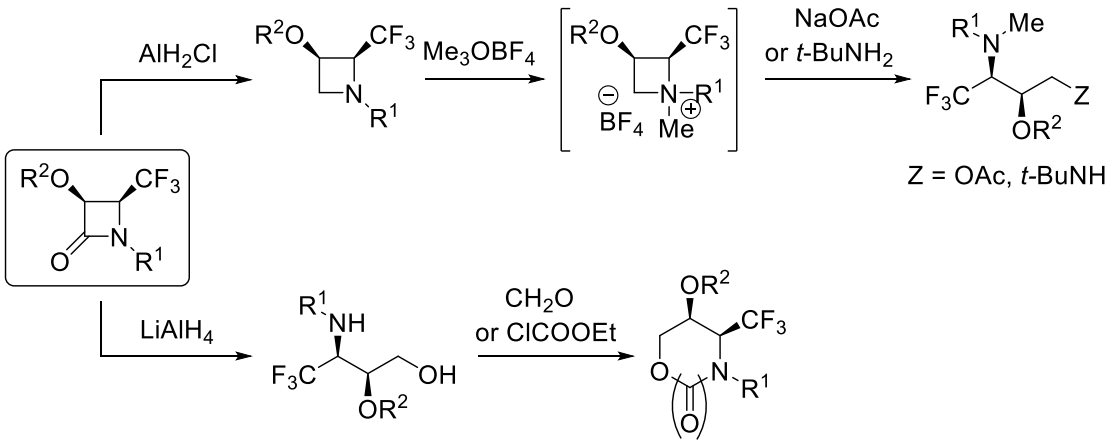
Due to their inherent chemical and biological properties, β-lactams or azetidin-2-ones represent an important class of four-membered azaheterocycles. In addition to their celebrated antibacterial activities, β-lactams are used in a variety of therapeutic areas. Besides their pharmacological relevance, β-lactams are also considered as important building blocks in organic chemistry for the synthesis of a wide variety of acyclic and heterocyclic compounds, which in their turn can serve as synthons for the development of novel, biologically relevant target structures. On another note, because of the specific chemical and physical properties of fluorine, the introduction of a CF_3-moiety in pharmacologically active compounds is known to convey beneficial biological effects to the resulting molecules, hence the increasing interest from organic and medicinal chemists in polyfunctional CF_3-substituted scaffolds.

In this work, 4-CF_3-azetidin-2-ones were prepared applying the widely known Staudinger synthesis, and their synthetic potential as eligible new building blocks for the construction of CF_3-containing azetidines, diaminopropanes, aminopropanol derivatives, 1,3-oxazinanes and 1,3-oxazinan-2-ones was evaluated. This β-lactam building block approach has thus been shown to provide a convenient new entry into trifluoromethylated scaffolds as useful synthetic intermediates *en route* to a variety of CF_3-functionalized target structures.[1]



[1] Dao Thi, H.; Decuyper, L.; Mollet, K.; Kenis, S.; De Kimpe, N.; Van Nguyen, T and D'hooghe, M., Synlett 27 (2016) 1100-1105.

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