

Title: **Towards the synthesis of a thermolabile linker**

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Thermolabile protecting groups (TPGs) present a significant interest in organic chemistry as the mere deprotection with the increase of the temperature avoids the use of chemicals, complying with the principles of green chemistry. The deprotection is produced generally in mild conditions by an intramolecular cyclization, releasing the compound. This idea of thermal cleavage was taken into consideration by Dr Patrick Gamez's research group to develop versatile nanosystems for the selective delivery of drugs, with the purpose of fighting against non-communicable diseases such as cancer.

2-[N-(2-pyridyl)-N-[4-(methoxycarbonyl)benzyl]amino]ethanol (**5**) was synthesized to fulfil this function of thermolabile linker. The synthesis was carried out by mainly implying nucleophilic substitution reactions and the final yield was 35%. Consequently, the experimental conditions were analyzed and some modifications were suggested in order to try to improve the performance in the near future. For the same reason, two alternative synthetic paths were proposed involving other nitrogen alkylation reactions, such as the Pd (0) catalyzed Buchwald-Hartwig reaction or the reductive amination.

All compounds obtained in the synthesis have been characterized by $^1\text{H-NMR}$, $^{13}\text{C-NMR}$ and IR spectroscopy.

Keywords: Thermolabile linker, thermolabile protecting group, nanosystem, organic synthesis.