Supramolecular control of synthetic efficiency: Synthesis of pseudopeptidic macrocycles through anion templation

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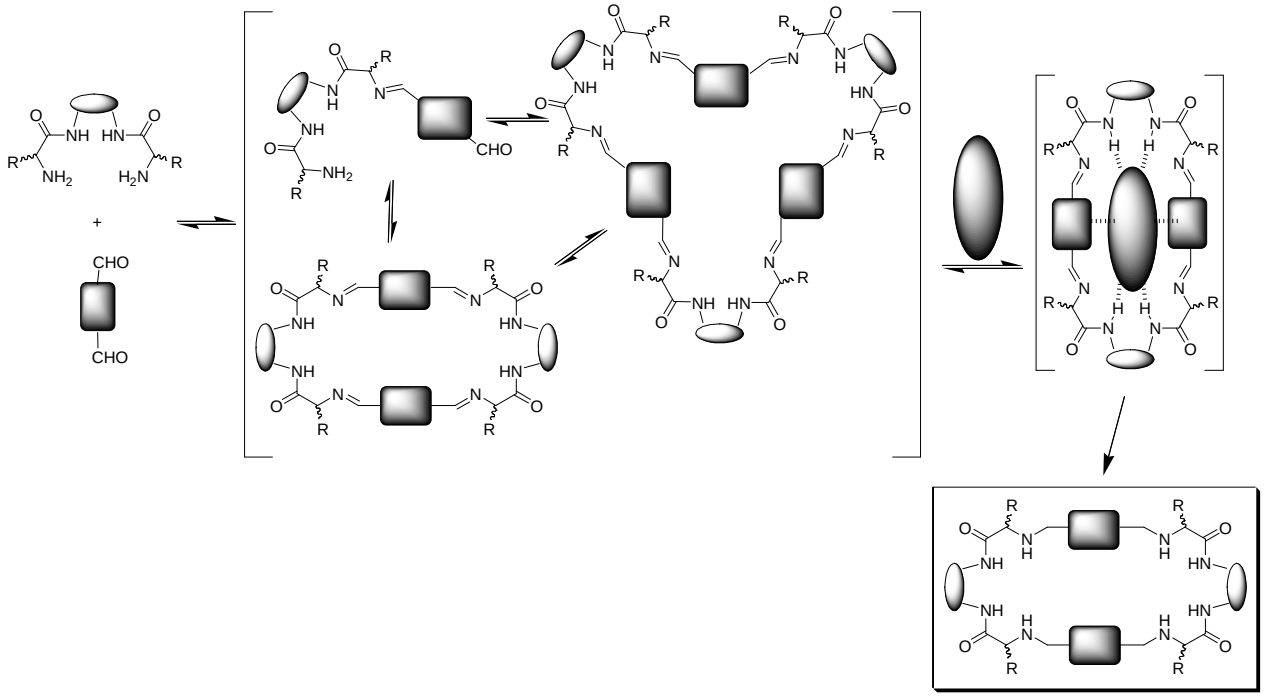
The development of synthetic methods for macrocyclization reactions allows the preparation of new receptors and biologically interesting molecules.[1] Usually, these processes are hampered by low yields and mixtures of compounds are often obtained. Templated synthesis is an attractive alternative for controlling the selectivity and efficiency of those processes.[2] From a sustainable point of view, the use of templates should reduce protection-deprotection steps and decrease the formation of undesired byproducts. Concomitantly, the usual tedious purification processes are thus diminished.

In spite of the increasing interest on anion coordination chemistry, anion templation approach to this problem is still in its infancy.[3] Taking advantage of the experience gained, we designed an anion templated procedure for the selective preparation of a family of pseudopeptidic macrocycles which would be difficult to obtain by more conventional methodologies. Here we report an easy one-pot two-step cyclization procedure, to render interesting functionalized large rings in good yields. Our approach also maximizes atom economy, which is also a key goal in Green Chemistry. Besides, the anion templation effect has been thoroughly studied using different experimental (NMR, ESI-MS, CD, UV) and theoretical (molecular modeling) approaches.[4]



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