TARGETING THE DIFFERENT BINDING SITES ON SARS-CoV-2 WITH SELF-ASSEMBLING β-CYCLODEXTRINS

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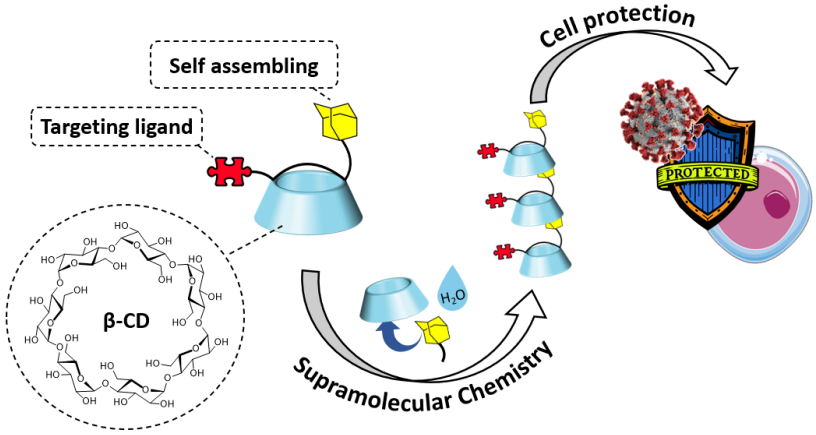
Despite the awareness risen by the global pandemic caused by SARS-CoV-2, there is still a lack of over-the-counter tools to prevent the transmission of this and other respiratory viruses. To fight the infection caused by SARS-CoV-2, the main approach is to target its spike protein, which serves as a point of attachment to the host cells through two binding domains: the glycan- and the receptor-binding domain (GBD and RBD, respectively). Literature has shown examples of both GBD- and RBD-targeting inhibitors to prevent the infection by SARS-CoV-2, taking advantage of their affinity for different carbohydrates [1,2] or peptides [3]. In our laboratory, we have synthesised a system based on β-cyclodextrins decorated with an adamantane unit to promote a thermodynamically favoured self-assembly in water [4]. Now, we have designed and synthesised a library of ligands targeting both the GBD and RBD of SARS-CoV-2, which provides specificity to the scaffold to protect Vero E6 cells against viral infection. This research has provided encouraging results on the development of antiviral therapies against SARS-CoV-2 targeting either or both of its binding domains, informing a toolset of self-assembling cyclodextrins with potential to inhibit the infection not only by SARS-CoV-2, but also by other respiratory viruses.



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