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## Chemoselective "Click Routes" to highly functionalized Cyclodextrins

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The copper-catalyzed 1,3-dipolar cycloaddition reaction (CuAAC) of azides and alkynes and the ring opening of epoxides by nucleophiles are two of the most versatile reactions among "click chemistry" protocols. We developed improved procedures of these reaction exploiting the favorable effects of ultrasound (US) and microwave (MW) irradiation, either alone or combined<sup>1-3</sup>. Our fast and efficient procedures were successfully applied to the preparation of several cyclodextrin (CD) derivatives in high yields<sup>4,5</sup>. Among them a series of positively charged triazole-bridged CD derivatives (**A**). These hybrid molecules combine the features of CDs and ionic liquids and can be tailored "ad hoc" by varying the spacer length, the type of counter-anion and the heterocycle ring<sup>6</sup>. The reaction of epoxides with amines affords  $\beta$ -aminoalcohols, important intermediates for carbohydrate and nucleoside synthesis. A reaction that is strongly promoted by simultaneous US/MW irradiation<sup>7</sup>. In this context, the binding properties of the  $\beta$ -CD can be complemented by linking amino alcohol subunits that implement solubility and can be exploited to form efficient metal  $\beta$ -CD complexes applied as supramolecular catalyst in regio or enantioselective reactions<sup>8</sup>. The alkylation of monoamino  $\beta$ -CD with different epoxides and the study of its regioselectivity will be discussed. This strategy was used for the preparation of multi-CD assemblies and  $\beta$ -CD dimers by alkylation of suitable diepoxides (**B**).

