LIPOPHILIC AND AMPHIPHILIC CYCLODEXTRIN DERIVATIVES AS THE NEW CLASS OF HOST COMPOUNDS

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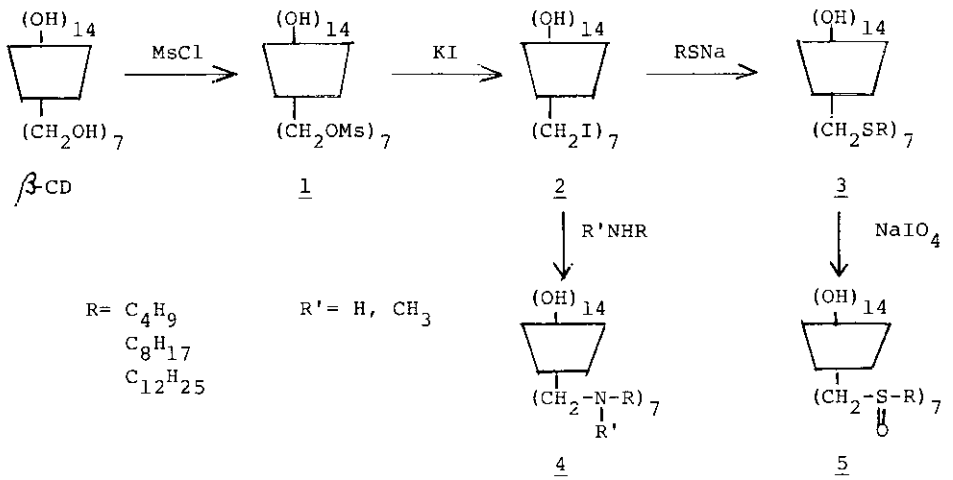
We wish to report the host-guest interactions in some lipophilic and amphiphilic cyclodextrin derivatives as the hosts. The host compounds were prepared by specific modification of β-cyclodextrin as outlined below:



When R= $C_{12}H_{25}$, the hosts 4 and 5 were lipophilic and soluble in chloroform. It was observed that 4a(R'=H, R=$C_{12}H_{25}$) was able to extract p-nitrophenol from the aqueous layer into the chloroform layer in a chloroform-water two system, in contrast to the inability of a model amine (dodecylmethylamine) to do it. In chloroform, 4a was also observed to shift an equilibrium of p-nitrophenol dissociation toward the phenolate anion, presumably by inclusion. Furthermore, the protonated 4a ammonium ion was soluble in water as a surfactant and showed inclusion interactions with hydrophobic anions. The host 5a (R=$C_{12}H_{25}$) was insoluble in water, but could be solubilized in surfactant micelles in water, and a co-micelle of 5a-CTABr cationic surfactant showed an enhanced catalytic activity in the hydrolysis of p-nitrophenyl carboxylates as compared to those of unsubstituted β-CD and CTABr micelle. Further studies on these host compounds as well as on the related compounds are in progress.