Understanding the Reactivity of 4(3*H*)-Quinazolinones Via *N*3-Alkylation

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Quinazolinones are a privileged scaffold, which are structures that appear commonly in biologically active molecules. There are two isomers: 2-Quinazolinone and 4-Quinazolinone, with 4(3*H*)-Quinazolinone being the focus of this project. Quinazolinone-containing molecules exhibit diverse biological activities, serving as anti-tumor agents, anti-virals, anti-bacterials, anti-tubercular agents, antioxidants, anticonvulsants, and anti-inflammatory agents. Considering this, the goal of this project was to create new quinazolinone derivatives and advance understanding of their reactivity. In one set of experiments, we explored the efficiency and regioselectivity of *N*3-alkylation of variously C2-substituted-4(3*H*)-quinazolinones with methyl bromoacetate. From these efforts, we discovered that using a strong base in the reaction resulted in ideal *N*3-alkylation with a good yield. We also found that the ideal C2 substituent was not electron-donating or bulky. Another set of experiments aimed to prepare *N*3-alkylamino-4-quinazolinones via *N*3-alkylation with 1,2-dibromoethane followed by nucleophilic substitution with a primary amine. These efforts resulted in the successful generation of three target quinazolinone derivatives. Overall, this study provided valuable insights into the reactivity of 4(3*H*)-quinazolinones and may facilitate the creation of quinazolinone derivatives in future endeavors.