Bromination of 4-bromoindanone and 5-bromoindanone

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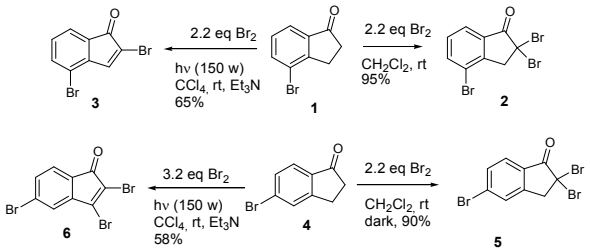
INTRODUCTION

Brominations of hydrocarbons are important processes in synthetic chemistry.[1-2] Brominated compounds are valuable starting materials for organometallic reagents[3] and coupling reactions.[4] Indanes and indanones are used extensively in medicinal chemistry.[5]

Herein, we carried out the bromination reactions of 4-bromoindanone, 5-bromoindanone and formed the di- and tribromoindanone which could be the precursors for synthesis pharmaceutically, synthetically and medicinally important compounds.

RESULTS AND DISCUSSION

The treatment of 4-bromoindanone (**1**) with 2.2 equivalent of bromine at room temperature for 2 h yielded 2,2,4-tribromoindanone (**2**) in quantitative amount. 4-bromoindanone (**1**) reacted with bromine in carbon tetrachloride and triethylamine while irradiation with a 150 W projector lamp for 12 h gave dibromide **3** (65%). 2,2,5-tribromoindanone (5) was generated by treatment of 5-bromoindanone (4) with 2.2 equivalent of bromine in dichloromethane at rt for 2 h in a yield of 90%. The reaction of 5-bromoindanone with 3.2 equivalent of bromine in carbontetrachloride and Et_3N at rt while irradiation with a 150 W projector lamp for 12 h gave 2,3,5-tribromoindenone (6) in 58% yield. (Scheme).



Scheme: Bromination reactions of 4-bromoindanone and 5-bromoindanone

Table 1. ^{1}H-NMR (300 MHz, $CDCl_3$), ^{13}C-NMR values of synthesized compounds, **2,3,5,6.**

Comp.	Spectral Values
2	^{1}H-NMR: 7.92–7.86 (m, 2H), 7.44–7.38 (m,1H) , 4.20 (s, CH_2). ^{13}C-NMR: 192.4, 147.2, 139.8, 131.4, 130.9, 125.6, 121.4, 55.6, 53.3
3	^{1}H-NMR: 7.8 (s, 1H), 7.35-7,45 (m, 2H), 7.05 – 7.12 (m,1H)
5	^{1}H-NMR: 7.82–7.78 (d, 1H), 7.66 – 7.58 (dd, 2H) , 4.20 (S, CH_2). ^{13}C-NMR: 191.9, 148.8, 133.0, 132.7, 129.5, 128.1, 128,0, 56,0, 52,1
6	^{1}H-NMR:7.50–7.46 (m,1H), 7.34–7.26 (m, 2H), ^{13}C-NMR: 185.6, 144.8, 144.3, 132.8, 129.6, 127.7, 124.9, 124.3,124.0

CONCLUSION

Bromination of 4-bromoindanone (**1**) and 5-bromoindanone (**4**) were accomplished efficiently and optimum reaction conditions were presented.

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