Chapter 13
Oxidation Reactions

Additional/Practice Problems


\[ \text{Cl} \quad \text{OH} \quad \xrightarrow{1.5 \text{ mol } \text{Cr}_2\text{O}_3, 6\text{h}, \text{rt}} \quad \text{Cl} \quad \text{O} \]

\[ \text{78\%} \]


\[ \text{HO} \quad \text{AcO} \quad \xrightarrow{\text{PCC, SiO}_2, \text{DCM, rt, 90min}} \quad \text{O} \quad \text{AcO} \]

\[ \text{d,J-Menthol} \quad \text{d,J-Menthone} \]

3. 3-Acetoxy-17-ethylenedioxyestra-1,3,5(10)-trien-11-ol

\[ \text{AcO} \quad \xrightarrow{\text{PCC, Acetone, Al}_2\text{O}_3, \text{DCM, reflux, 4h}} \quad \text{AcO} \]

\[ \text{3-Acetoxy-17-ethylenedioxyestra-1,3,5(10)-trien-11-one (79\%)} \]

4. 1,2-dihydro-1-hydroxypyrrolizin-3-one

\[ \text{OH} \quad \xrightarrow{\text{PCC, DCM, rt, 1h}} \quad \text{O} \]

\[ \text{Pyrrolizine-1,3-dione (68\%)} \]


\[ \text{Ph} \quad \text{OH} \quad \xrightarrow{2 \text{ mol\% PCC}, 1.05 \text{ eq } \text{H}_2\text{O}_6, \text{MeCN, 0\textdegreeC, rt, 2h}} \quad \text{Ph} \quad \text{O} \]

\[ \text{89\%} \]

\[ \text{Ph} \quad \text{OH} \quad \xrightarrow{2 \text{ mol\% PCC}, 1.05 \text{ eq } \text{H}_2\text{O}_6, \text{MeCN, 0\textdegreeC, rt, 2h}} \quad \text{Ph} \quad \text{O} \]

\[ \text{96\%} \]


10. Singh R P; Subbarao H N; Dev S, Tetrahedron, 1979, 35, 1789


13. O₃, NaHCO₃, DCM, iPrOH

14. Ac₂O, Et₃N