Chemoselective Reduction of 2-amino-4-oxo-4H-chromene-3-carbaldehyde by NaBH4/Al2O3

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ABSTRACT:

The chemoselective reduction of (2-amino-4-oxo-4H-chromene-3-carbaldehyde) the carbonyl (formyl) functionality via (NaBH4/Al2O3, 1:2 ratio) sodiumborohydride as reducing agent and using Al2O3 for solid surface in Methanol as a solvent, at 0 °C to room temperature in excellent yield (82-94%) within a very short reaction time (only 5-10 min). The reduction reaction of α,β-unsaturated carbonyl compounds takes place selectively to yield the corresponding alkyl alcohols in good yields. Moreover, when two reducible functional groups such as aldehyde, ketone and double bond groups are present in the same molecule, this combination of catalyst selectively reduces the aldehyde functionality. In the absence of Al2O3, and with increasing the equiv. of sodiumborohydride it was reduce double bond and aldehyde functionality both. Density functional calculations (DFT) were also done of product and starting material.

**Thrust Area**- Organic Synthesis and computational chemistry (Physical Organic Chemistry)

**Keywords-** Chromones, chemoselective reduction, DFT, Sodiumborohydride, Alumina