Synthetic Study of Deuterium-labelled Aldehydes and Its Application

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Deuterium-labelled molecules are widely utilized in analytical, organic, inorganic, and pharmaceutical studies. In the last CSJ annual meeting, we reported a facile synthesis of deuterium-labelled aldehydes from aldehydes by means of NaBD₄ reduction followed by oxidation. In this presentation, we would like to describe further synthetic scope. A wide range of deuterium-labelled aldehydes were successfully prepared in two steps from 1 via 2. Various functional groups such as halogen, nitro, ester, and alkyne are compatible under the conditions. The synthetic utility is demonstrated by the synthesis of geranylgeraniol-1-d₂.