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Four step synthesis of Ibuprofen

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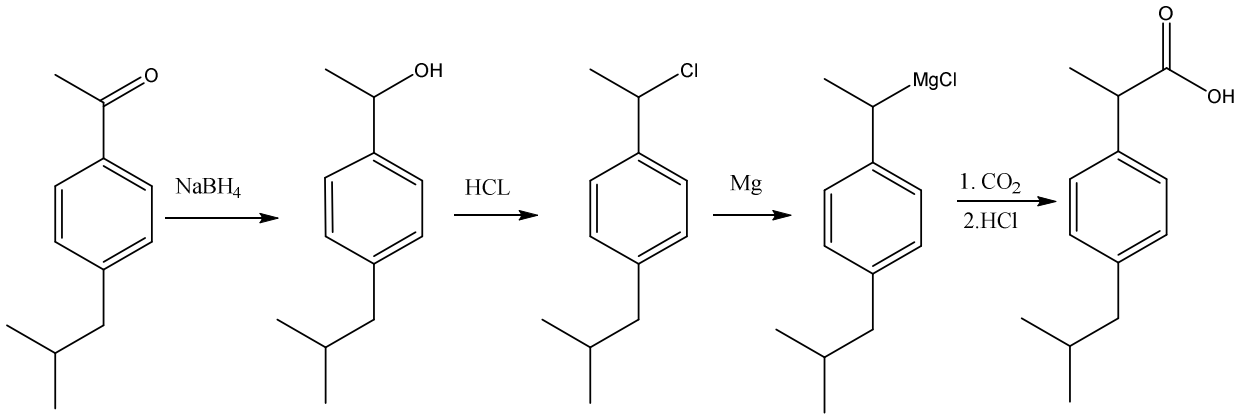
Four step synthesis of Ibuprofen



In this experiment ibuprofen was synthesized in four steps. Ibuprofen is an analgesic, antipyretic and non-steroidal anti-inflammatory drug. Ibuprofen works by reducing hormones that cause inflammation and pain in the body. Ibuprofen is used to reduce fever and treat pain or inflammation set on by headaches, toothaches, back pain, arthritis, menstrual cramps, minor injury, etc. It is particularly interesting because at moderate doses (not exceeding 1.2g a day) ibuprofen appears to have fewer gastrointestinal side-effects than aspirin and many other non-steroidal anti-inflammatory drugs. On a laboratory scale, Ibuprofen was prepared from the reduction of *p*-isobutylacetophenone to a carboxylic acid. An essential step in this transformation is the reduction of the ketone (*p*-isobutylacetophenone) to an alcohol. This was done using sodium borohydride. A more environmentally friendly method was adapted as a green alternative to this traditional synthesis. *p*-isobutylacetophenone was enantioselectivity reduced to an alcohol with *Daucus carota* root (carrots). This reaction is bio friendly, as it does not use any heat or any chemical reagents except for the starting ketone.