Due to the acidic nature of α hydrogens they can be exchanged with deuterium by reaction with D₂O (heavy water). The process is accelerated by the addition of an acid or base; an excess of D₂O is required. The end result is the complete exchange of all α hydrogens with deuterium.

**General reaction**

![Chemical structure](image)

Example 1: Deuterium Exchange

![Chemical structure](image)

**Mechanism in basic conditions**

1) Enolate Formation

![Chemical structure](image)

2) Deuteration

![Chemical structure](image)

**Problems**

1) Please draw the product for the following reactions.
2) Answers

Contributors

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