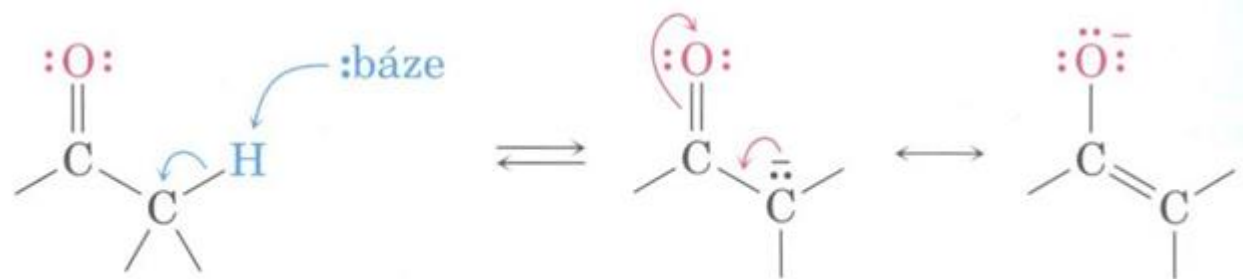
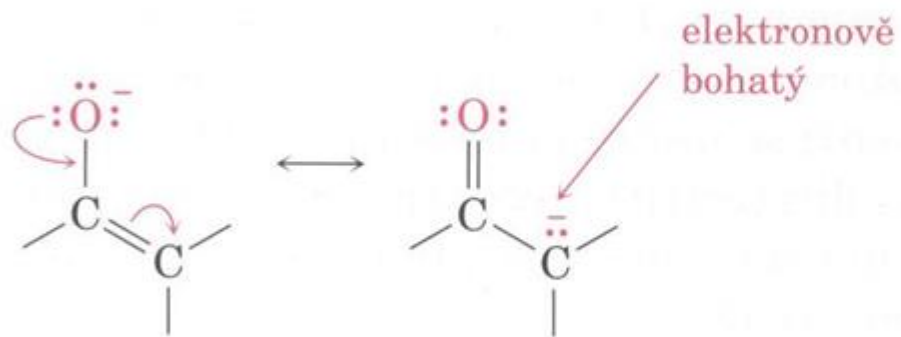


Aldolizace a Michaelovy adice

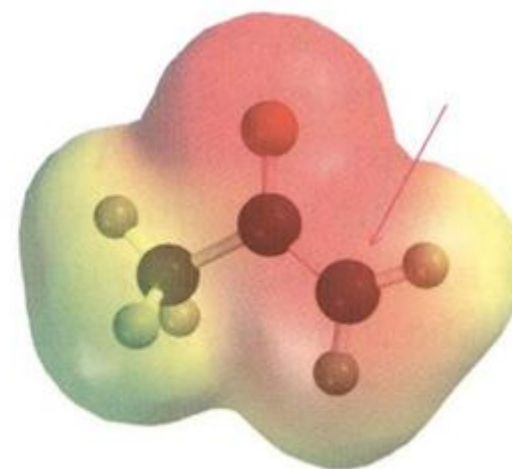


karbonylová sloučenina

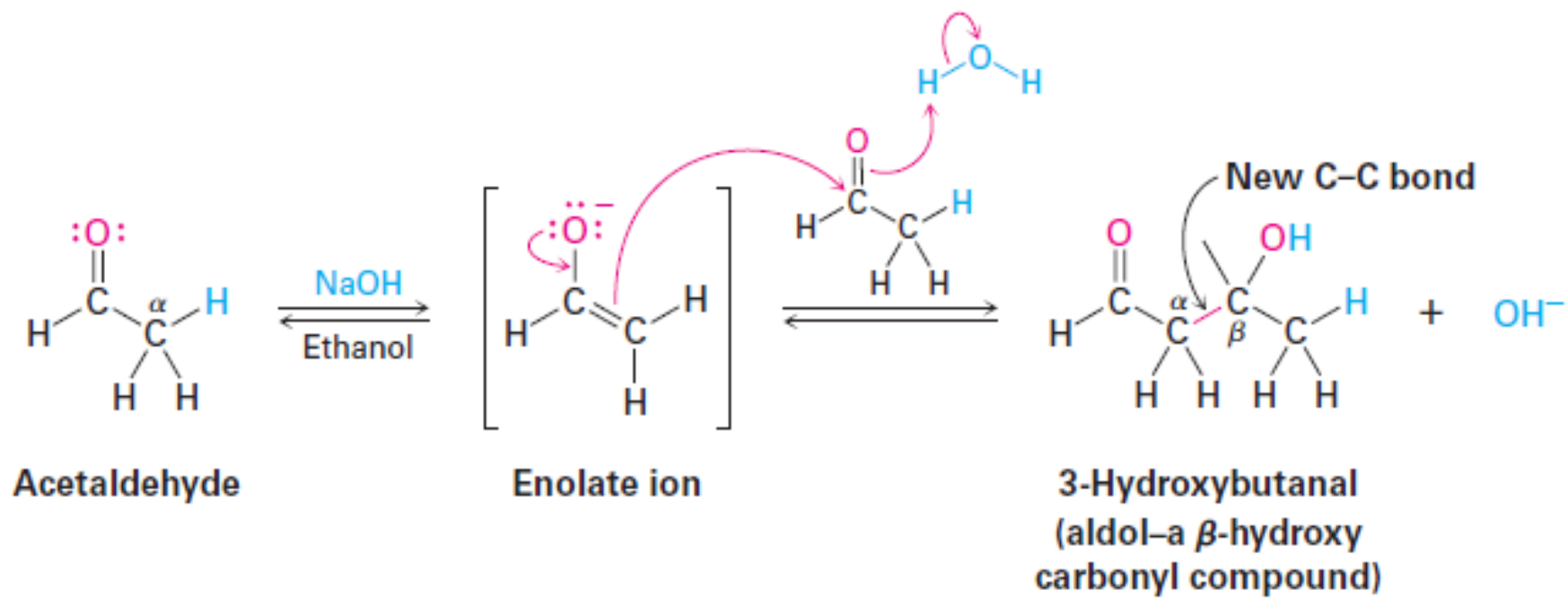
enolátový ion



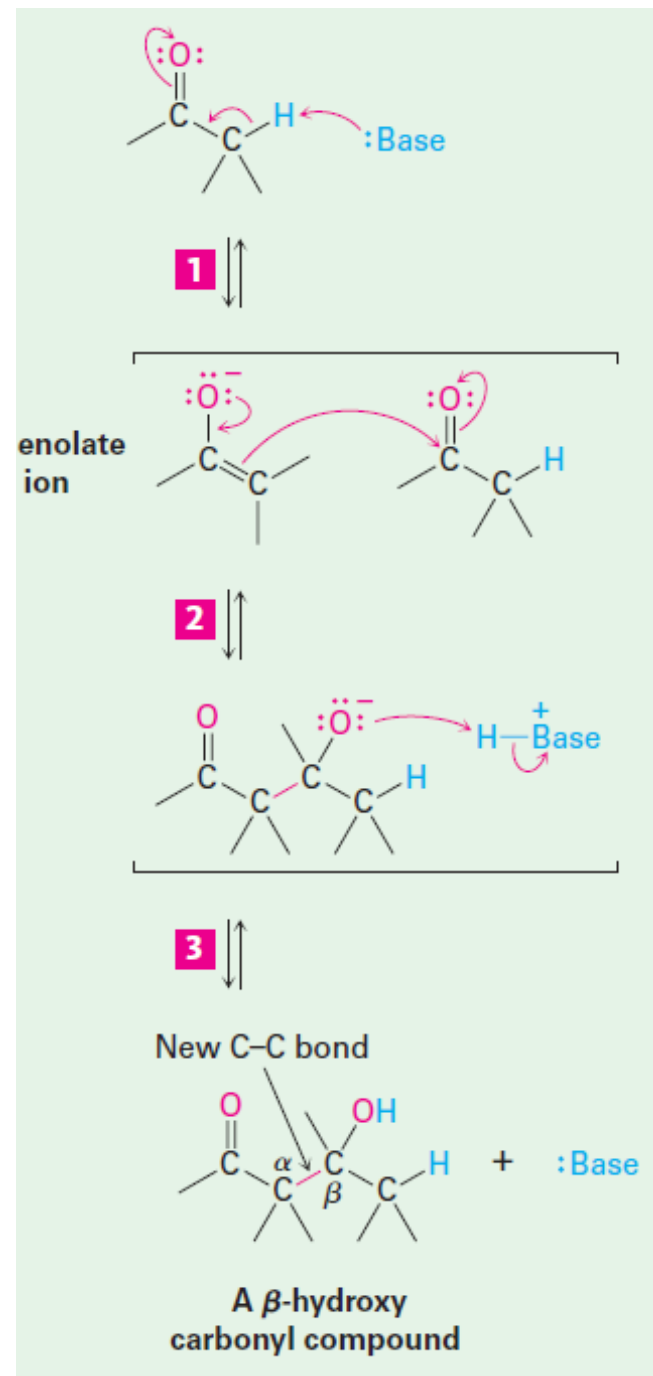
enolátový ion



Aldolová reakce

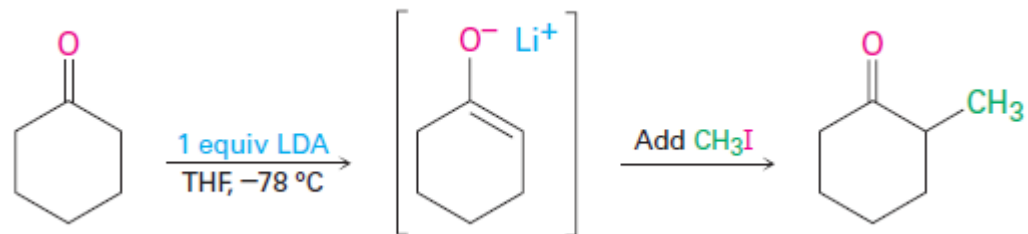


Mechanismus

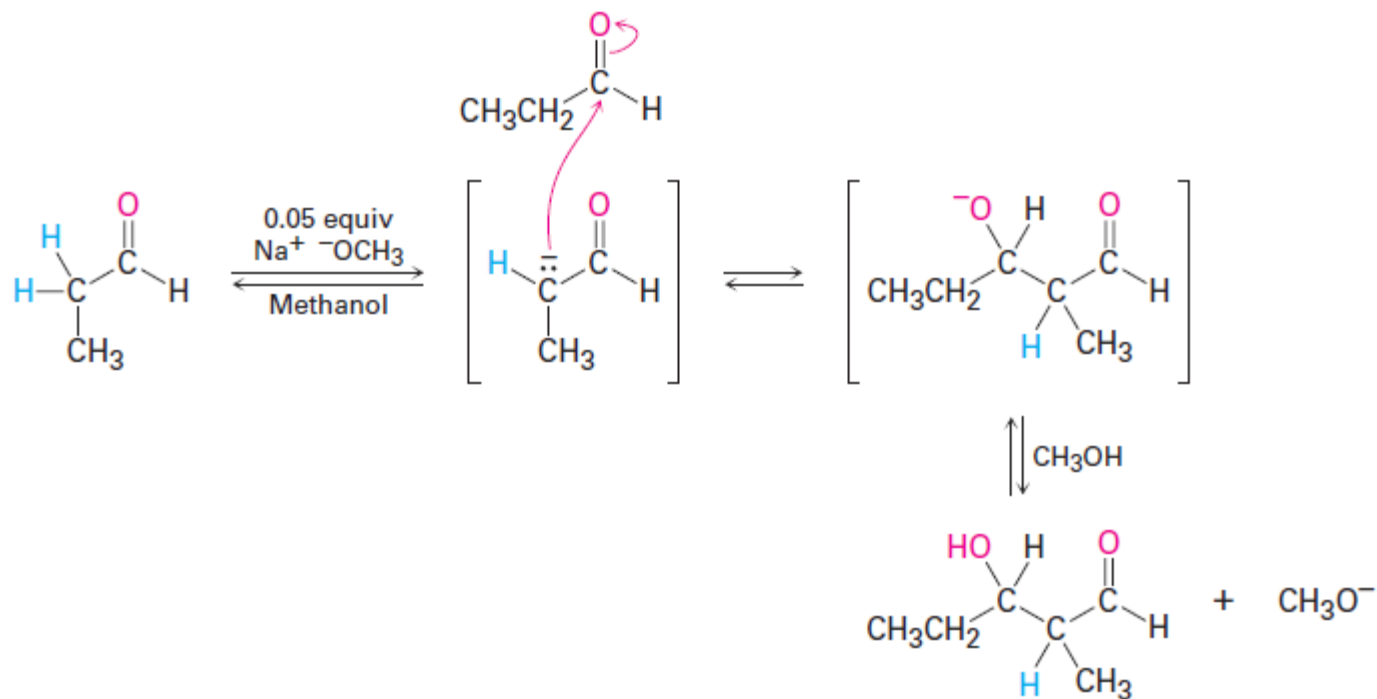


α -substitute vs aldolová reakce

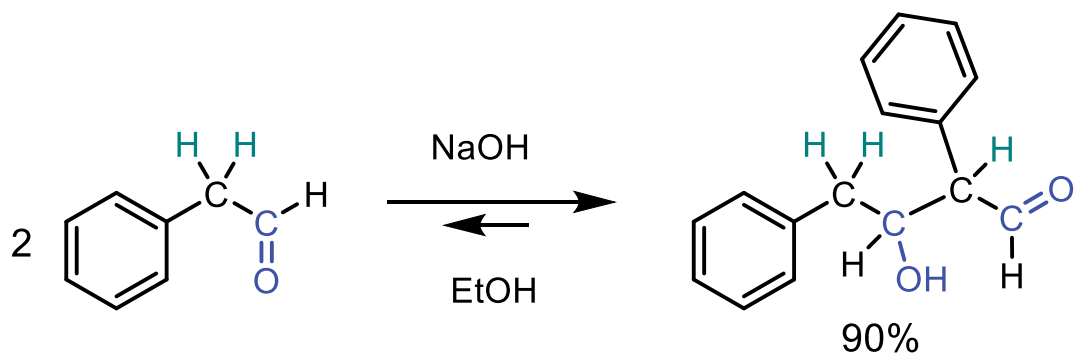
α -substitute



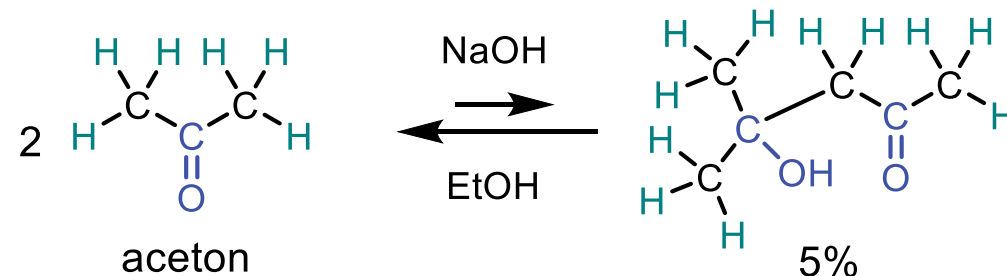
aldolová reakce



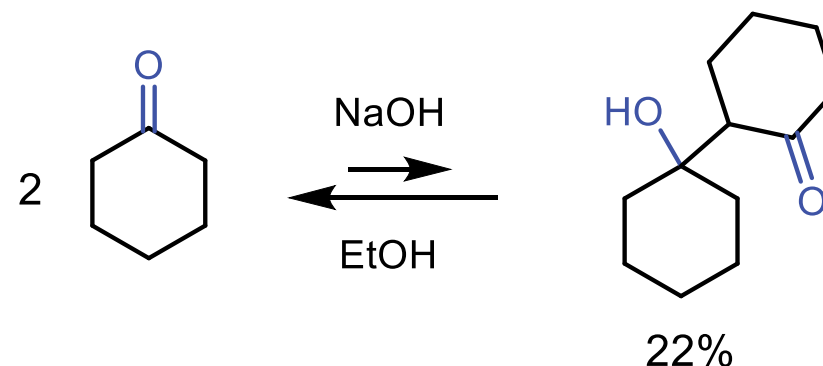
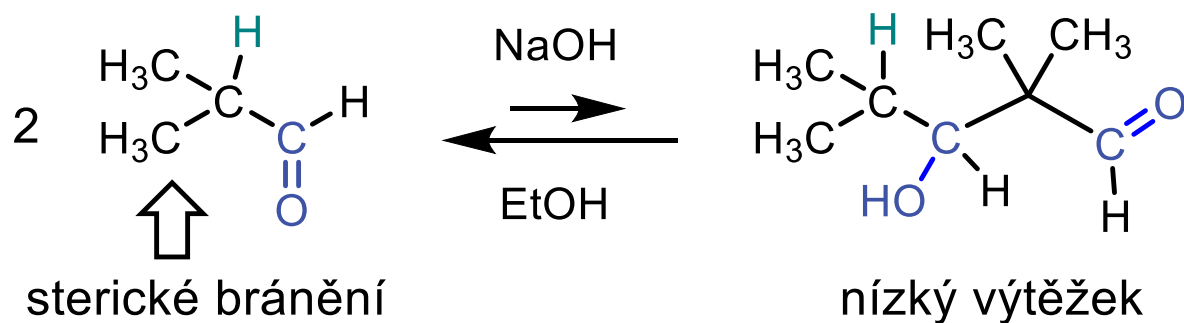
Aldehydy reagují ochotně a rovnováha posunuta k produktům



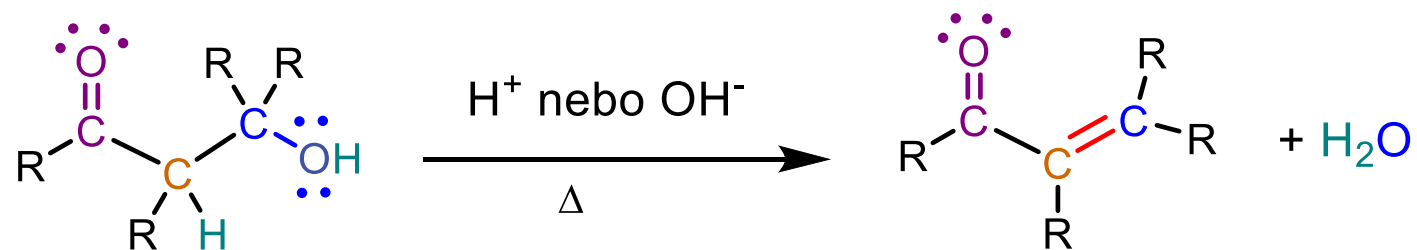
U ketonů obvykle rovnováha ve prospěch reaktantů



Pokud nejsou stericky bráněné substitucí v α - poloze

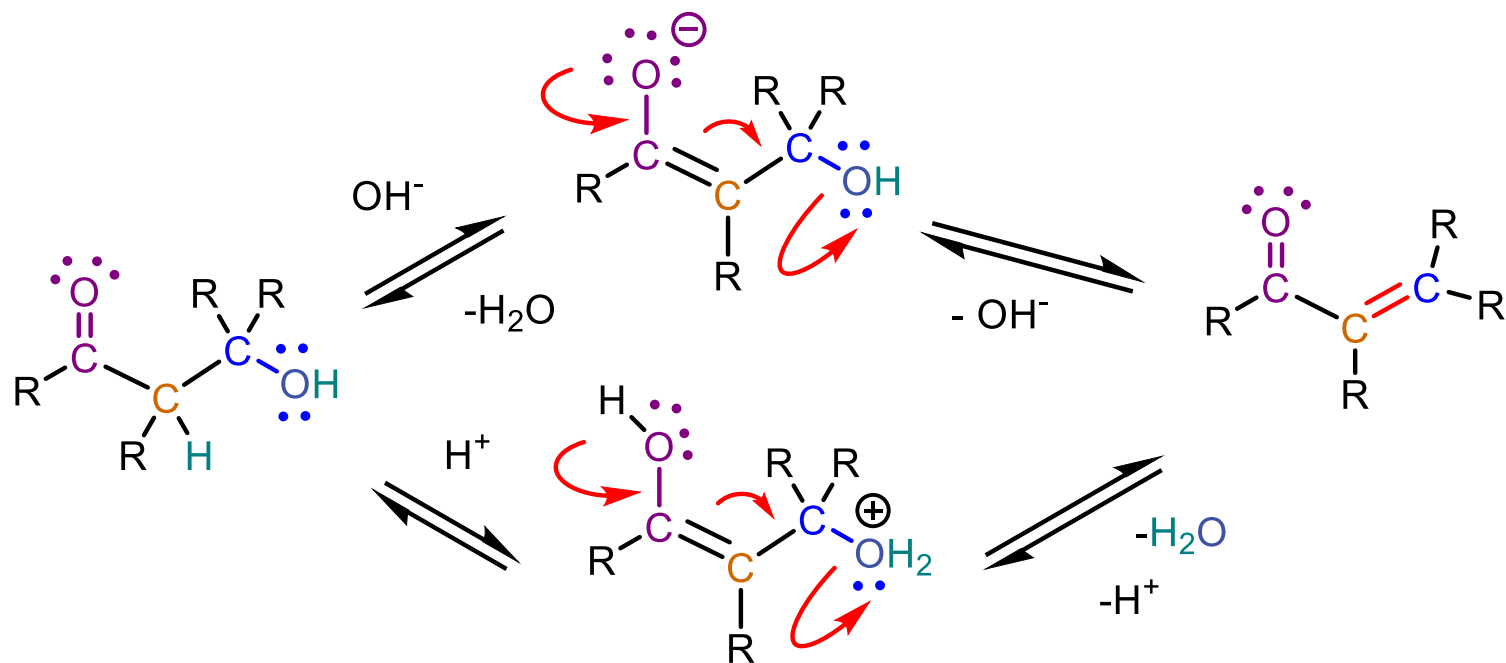


Dehydratace β -hydroxyaldehydů/ketonů – aldolová kondenzace

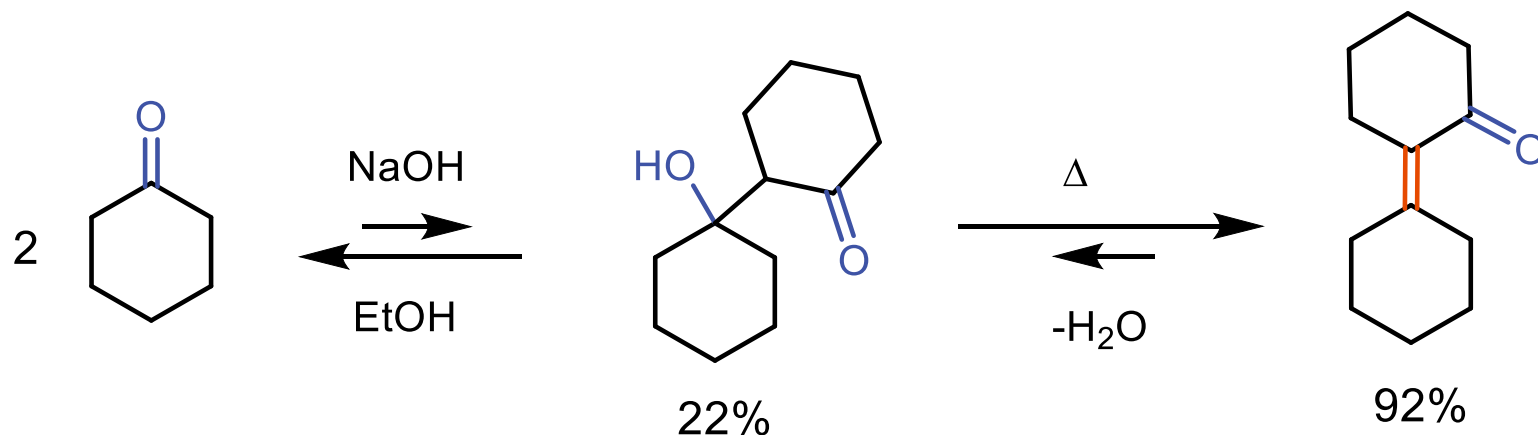


β -hydroxyaldehyd
nebo β -hydroxyketon

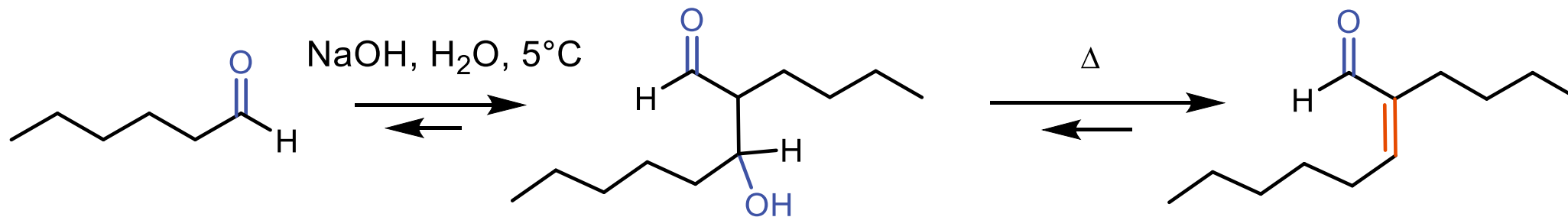
konjugovaný enon



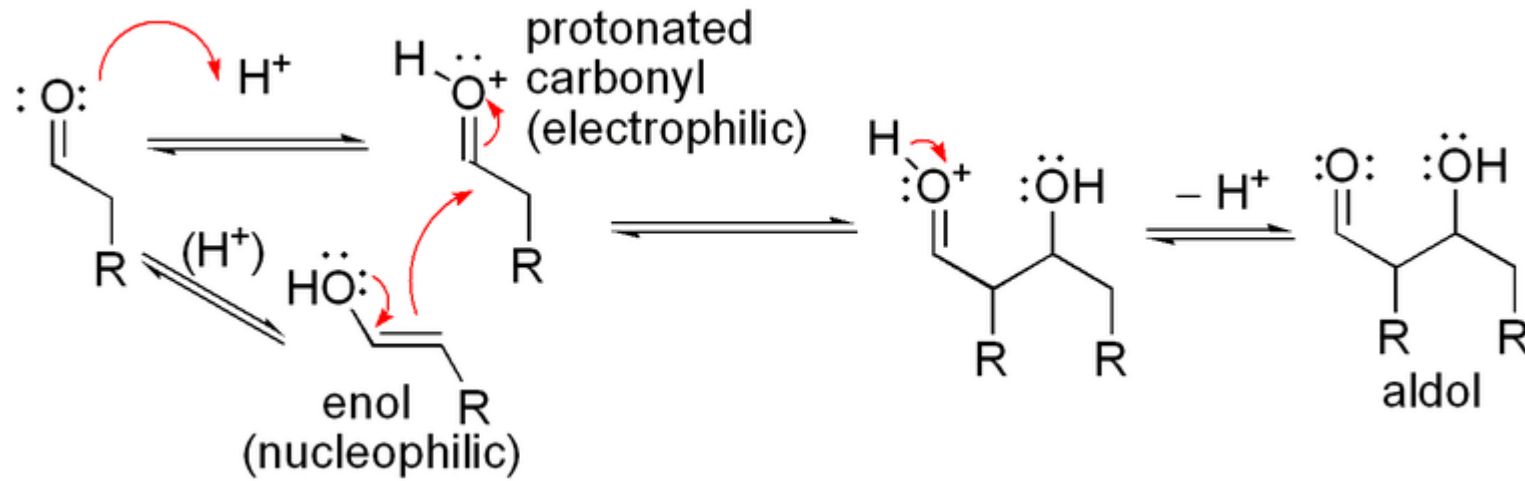
Dehydratace (a odstraňování vody z reakční směsi) posouvá rovnováhu i u reakcí, kde samotná aldolizace probíhá jen málo



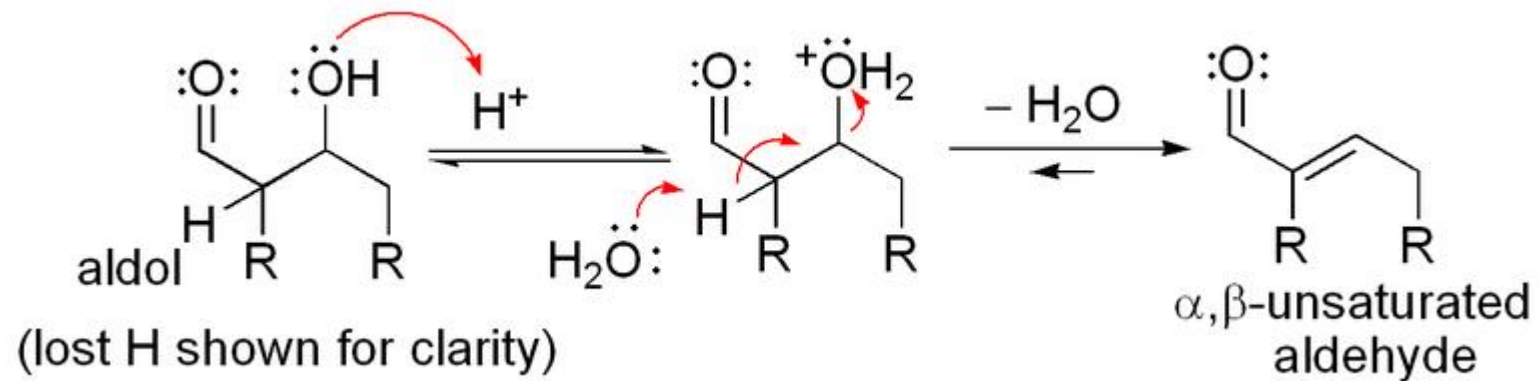
U reakcí aldehydů lze zastavit reakci ve stadiu aldolu pouze za nízké teploty – při zahřívání dochází k dehydrataci (aldolová kondenzace)



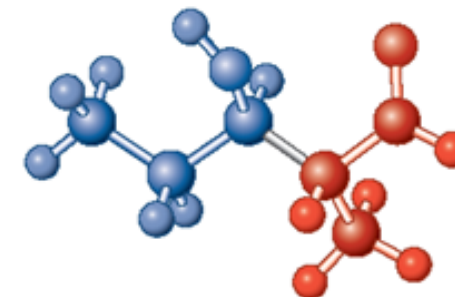
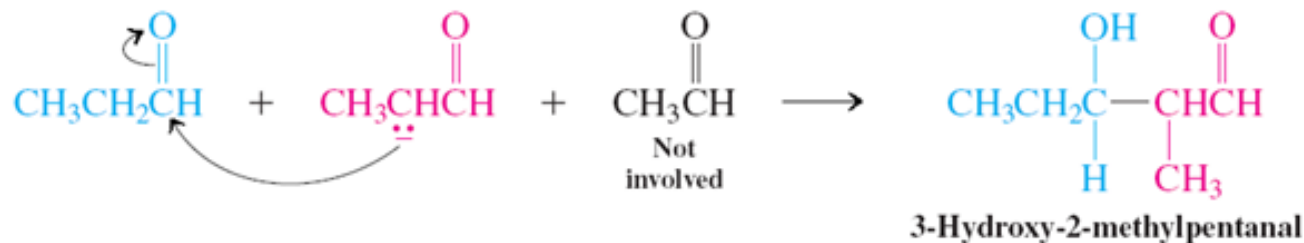
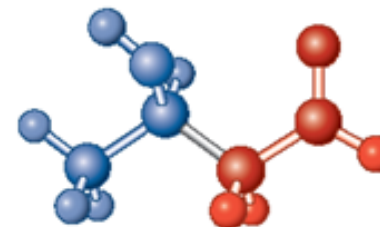
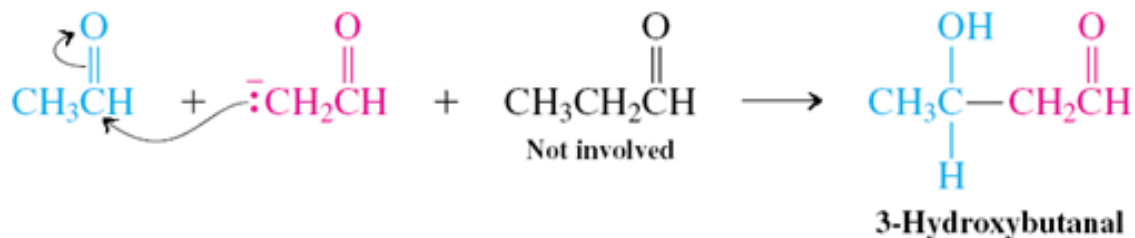
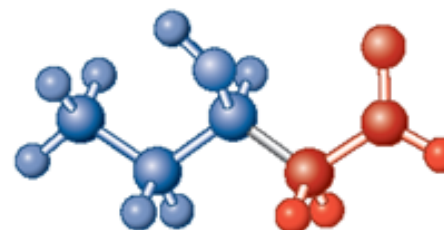
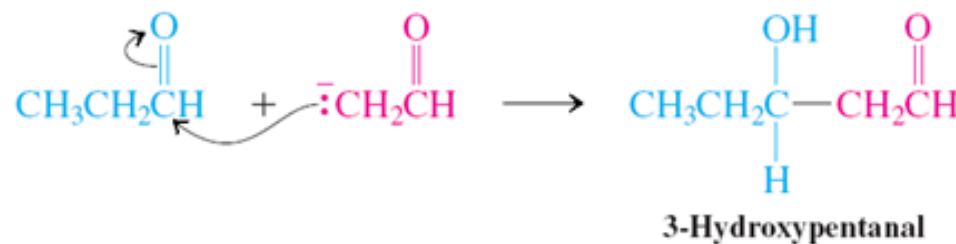
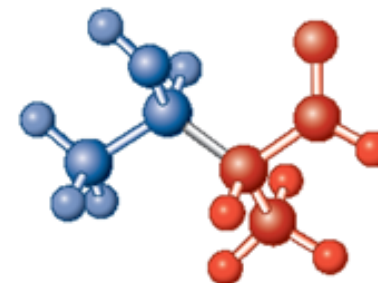
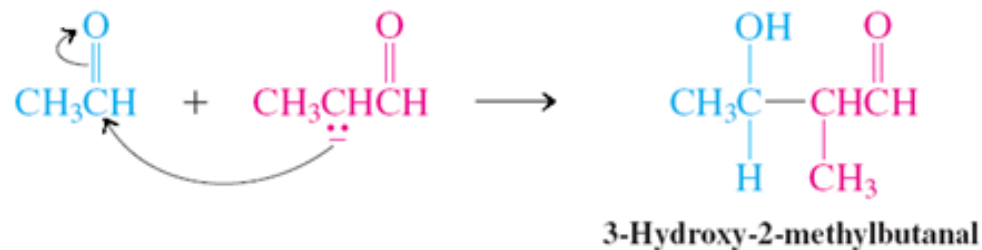
Kysele katalyzovaná aldolizace



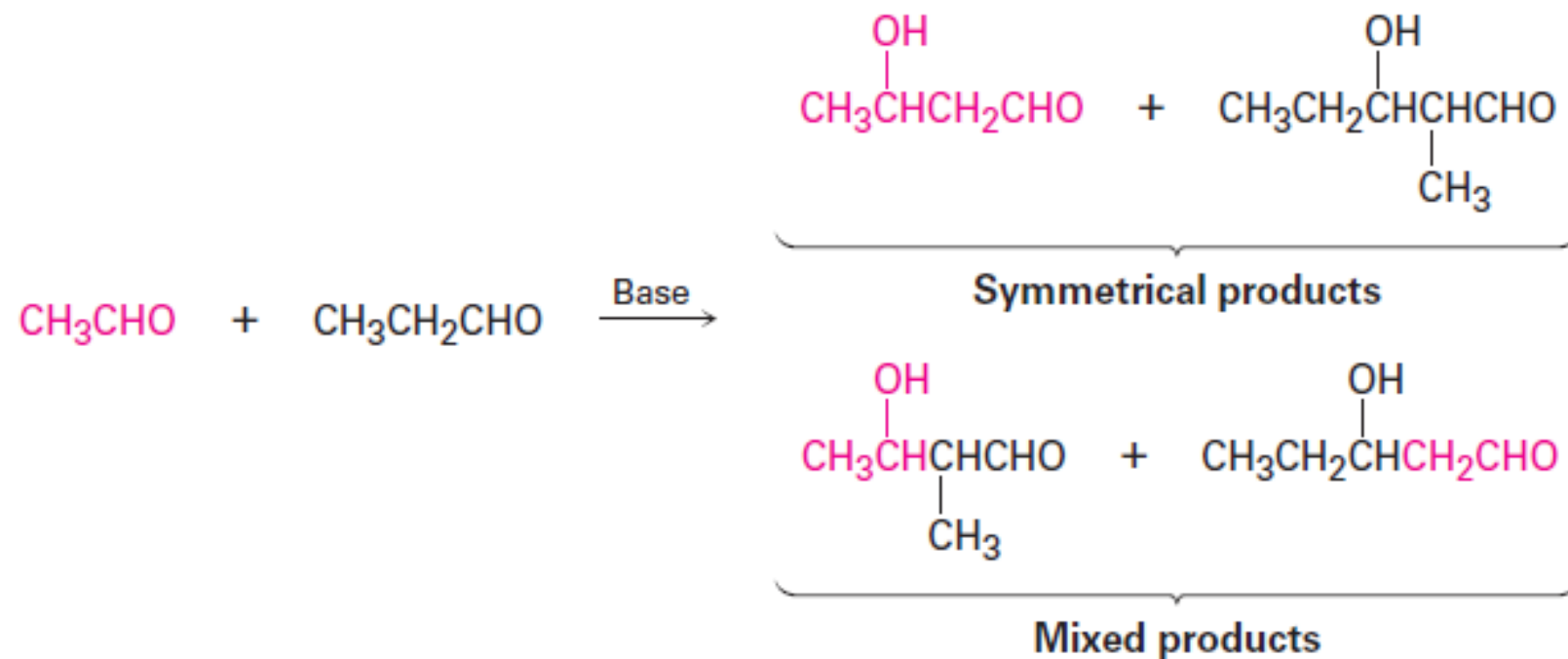
Kysele katalyzovaná dehydratace



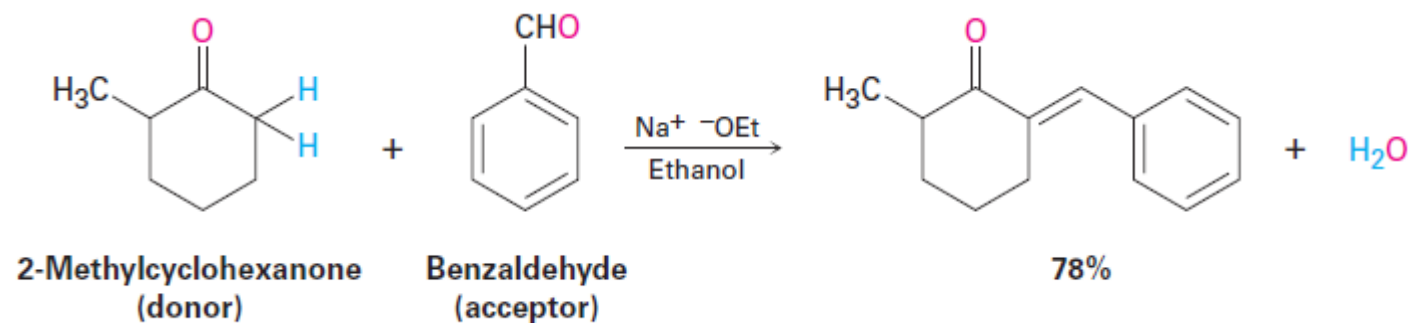
Neselektivní smíšená aldolizace acetaldehydu a propanalu (všechny tyto reakce probíhají paralelně a výsledkem je směs produktů)



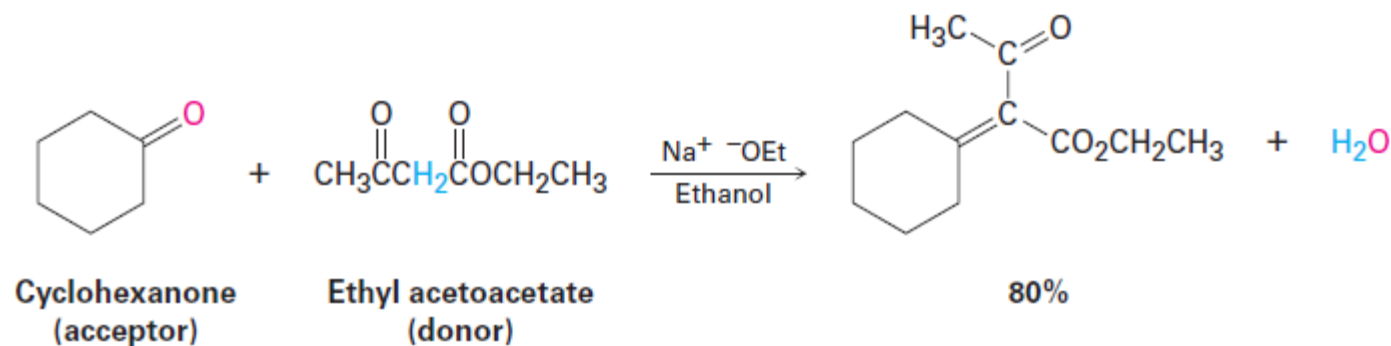
Neselektivní smíšená aldolizace



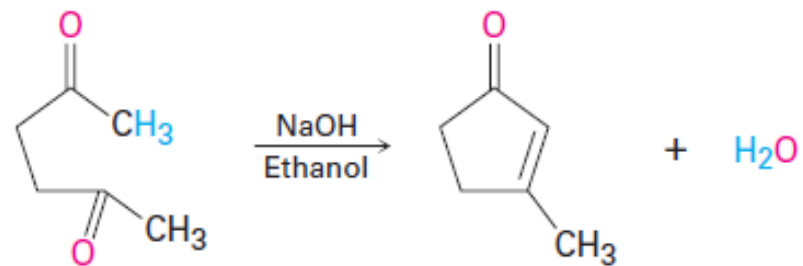
Řešení: a) jeden z reakčních partnerů nemůže enolizovat



Řešení: b) jeden z reakčních má výrazněji kyselé α-protony (C-kyselina)

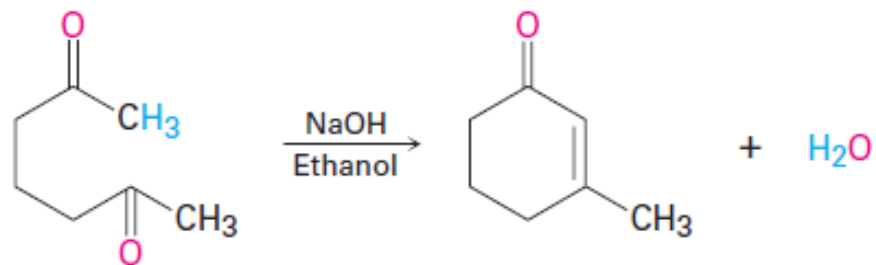


Intramolekulární aldolová reakce



2,5-Hexanedione
(a 1,4-diketone)

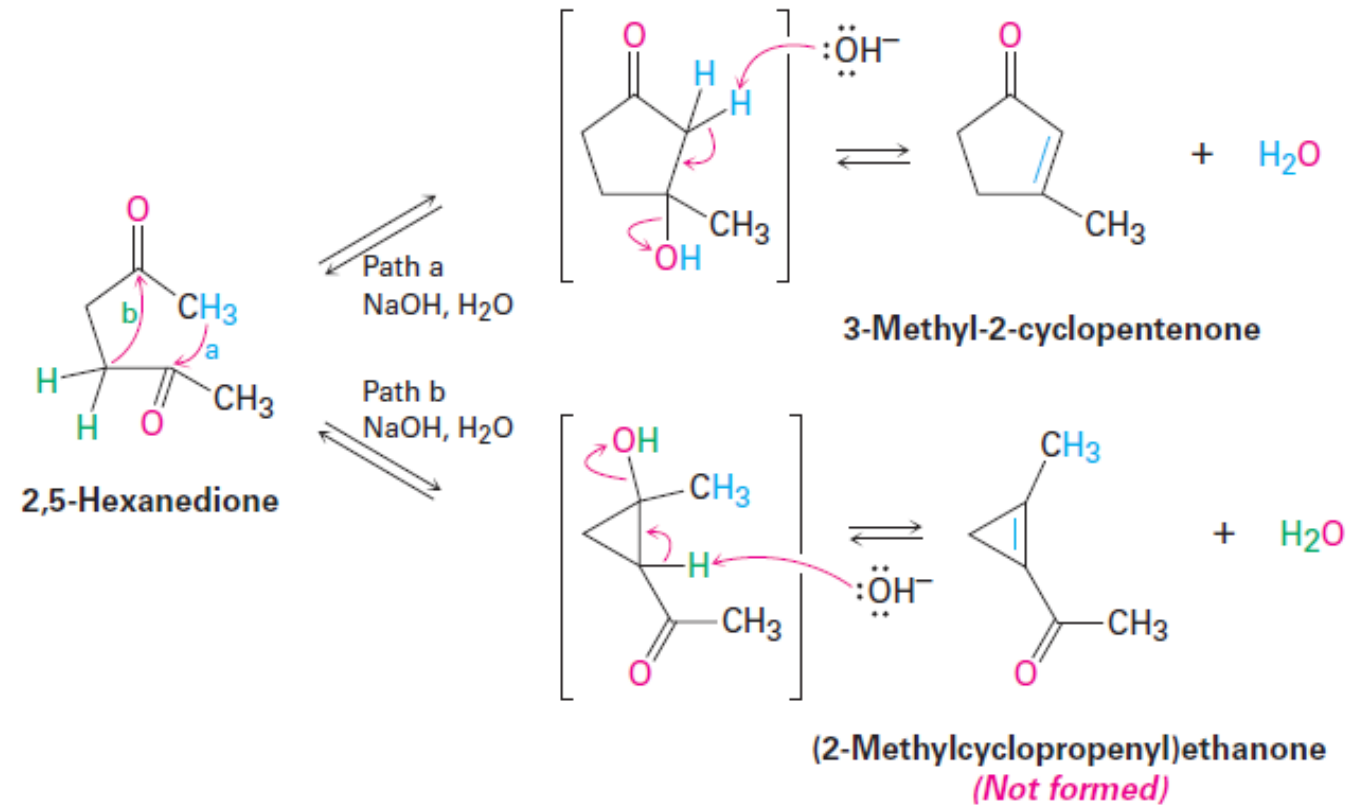
3-Methyl-2-cyclopentenone



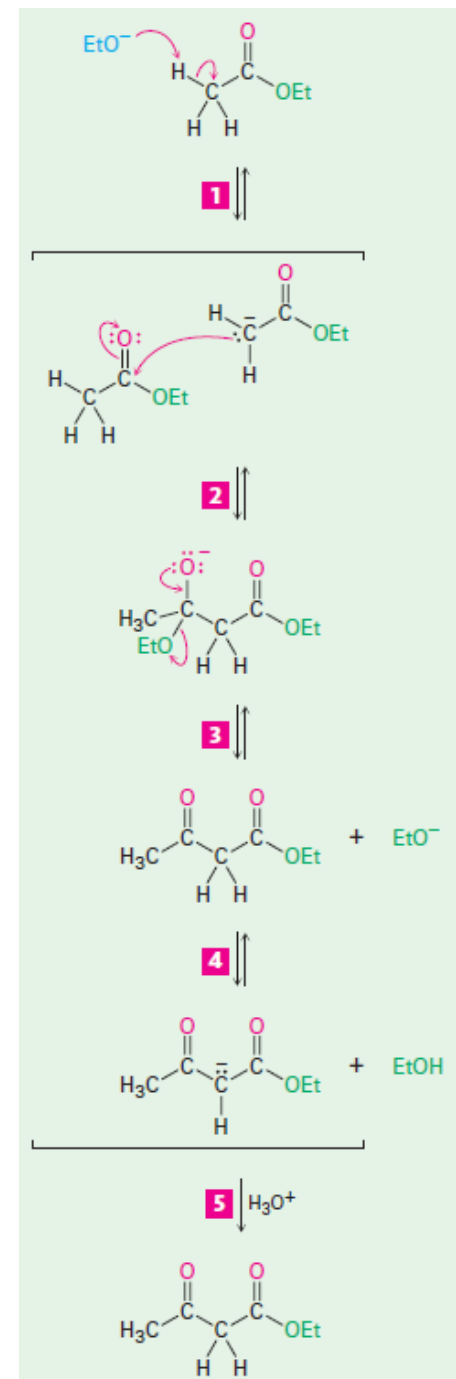
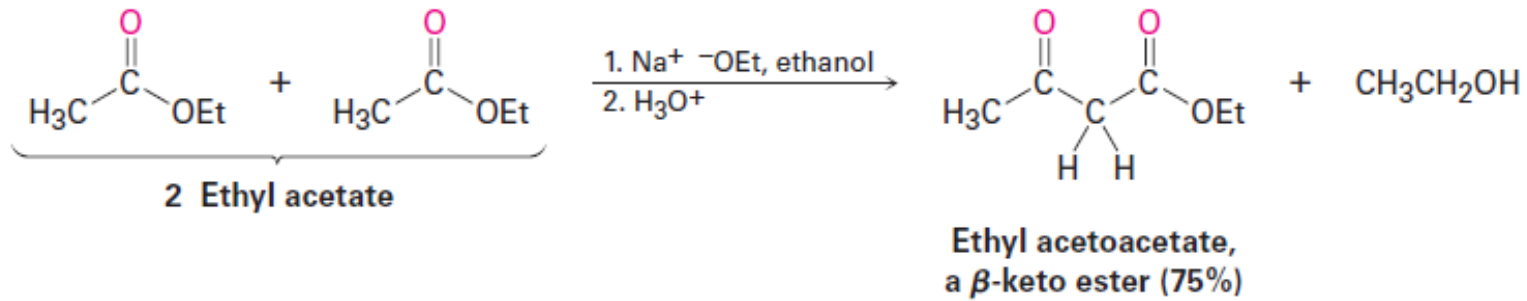
2,6-Heptanedione
(a 1,5-diketone)

3-Methyl-2-cyclohexenone

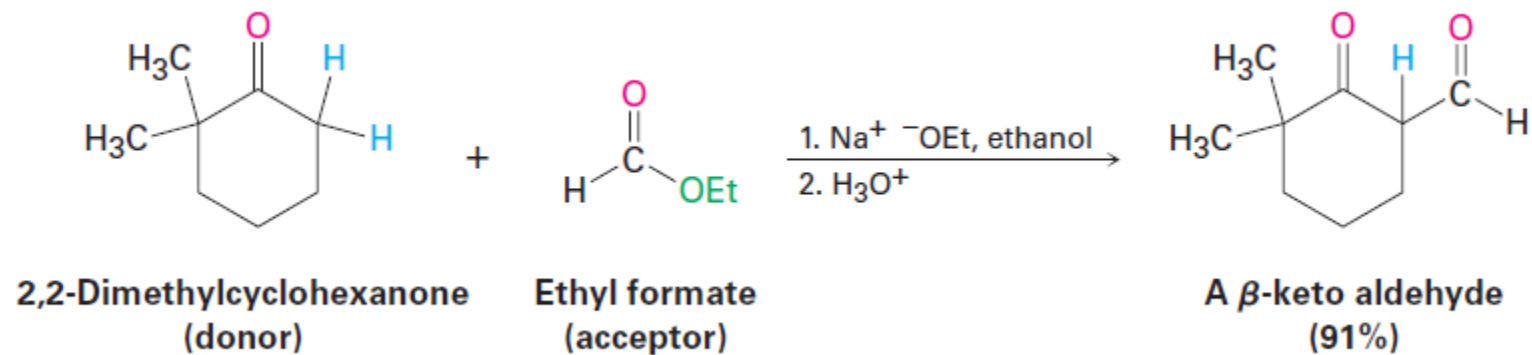
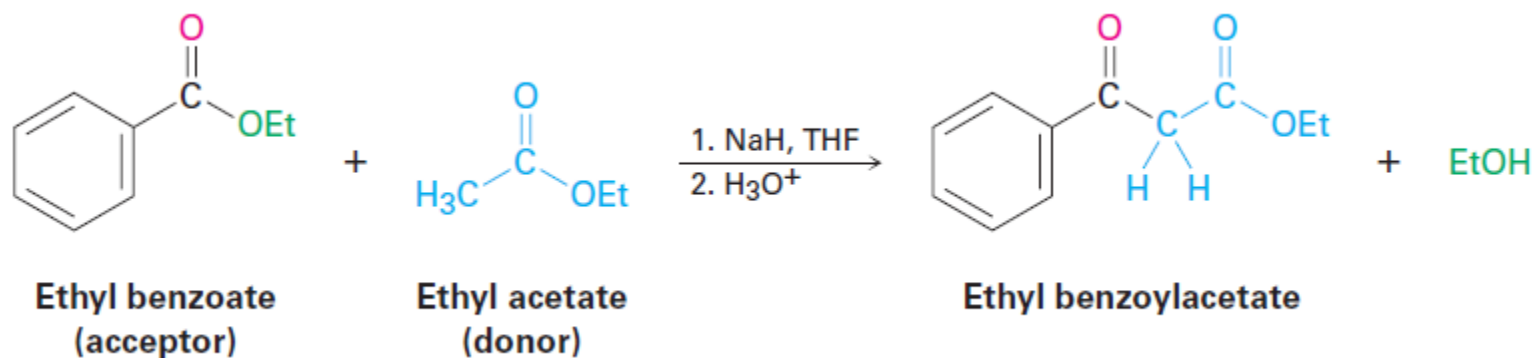
Mechanismus



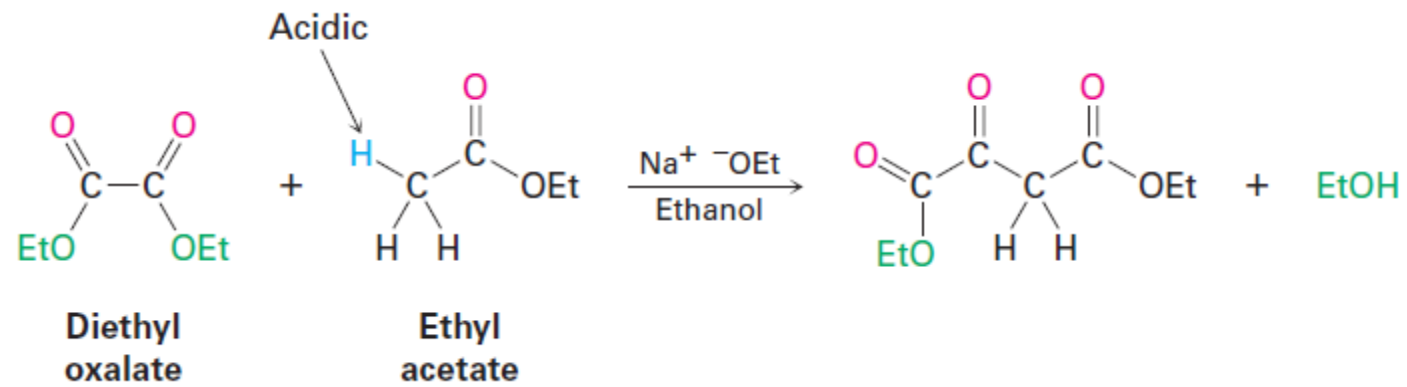
Clasienova kondenzace



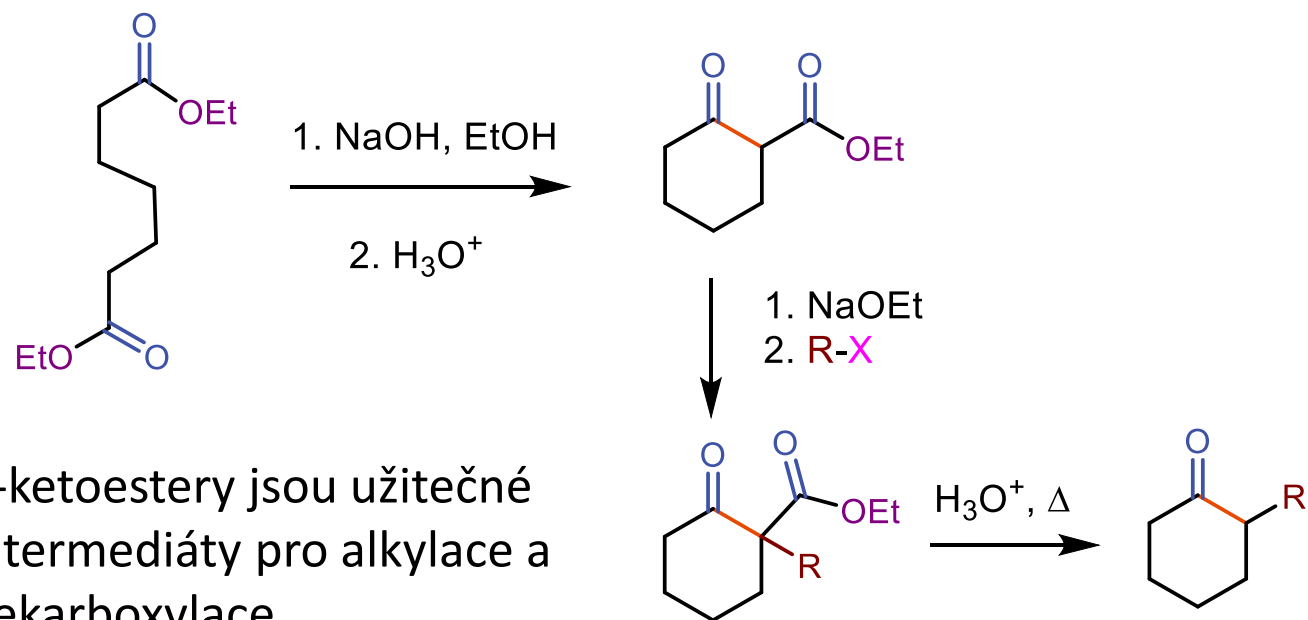
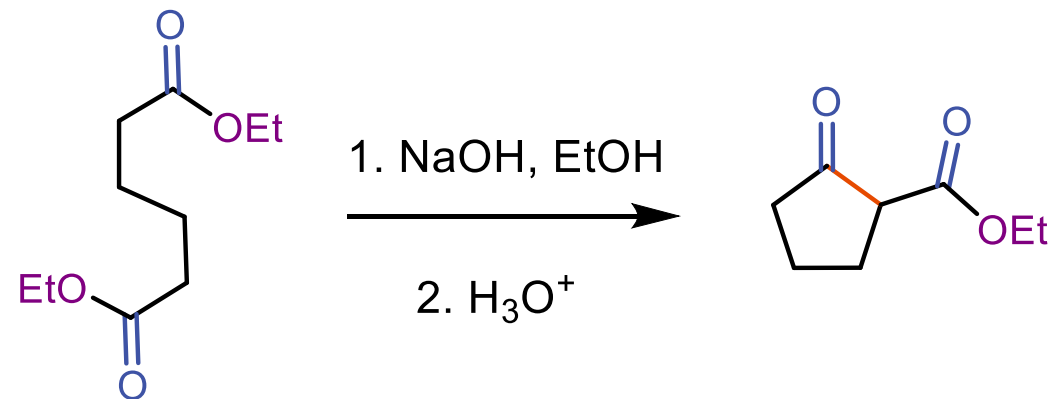
Smíšená Clasiénova kondenzace



Smíšená Clasiénova kondenzace

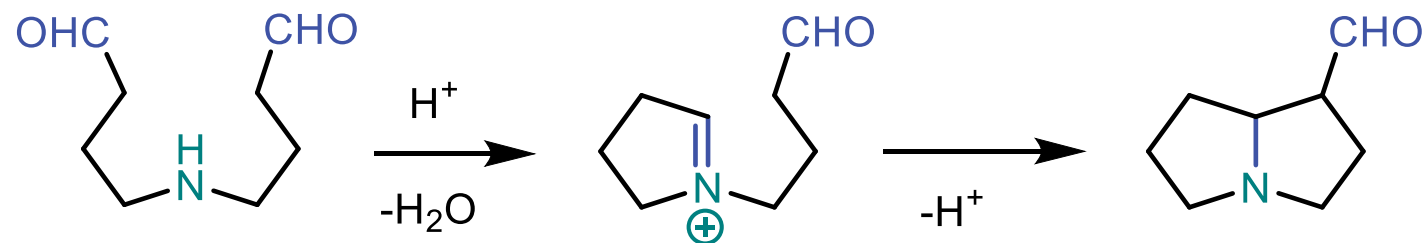
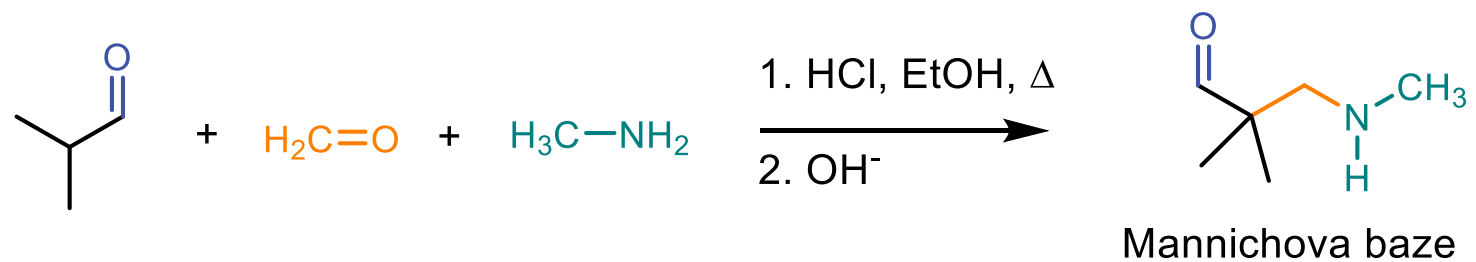
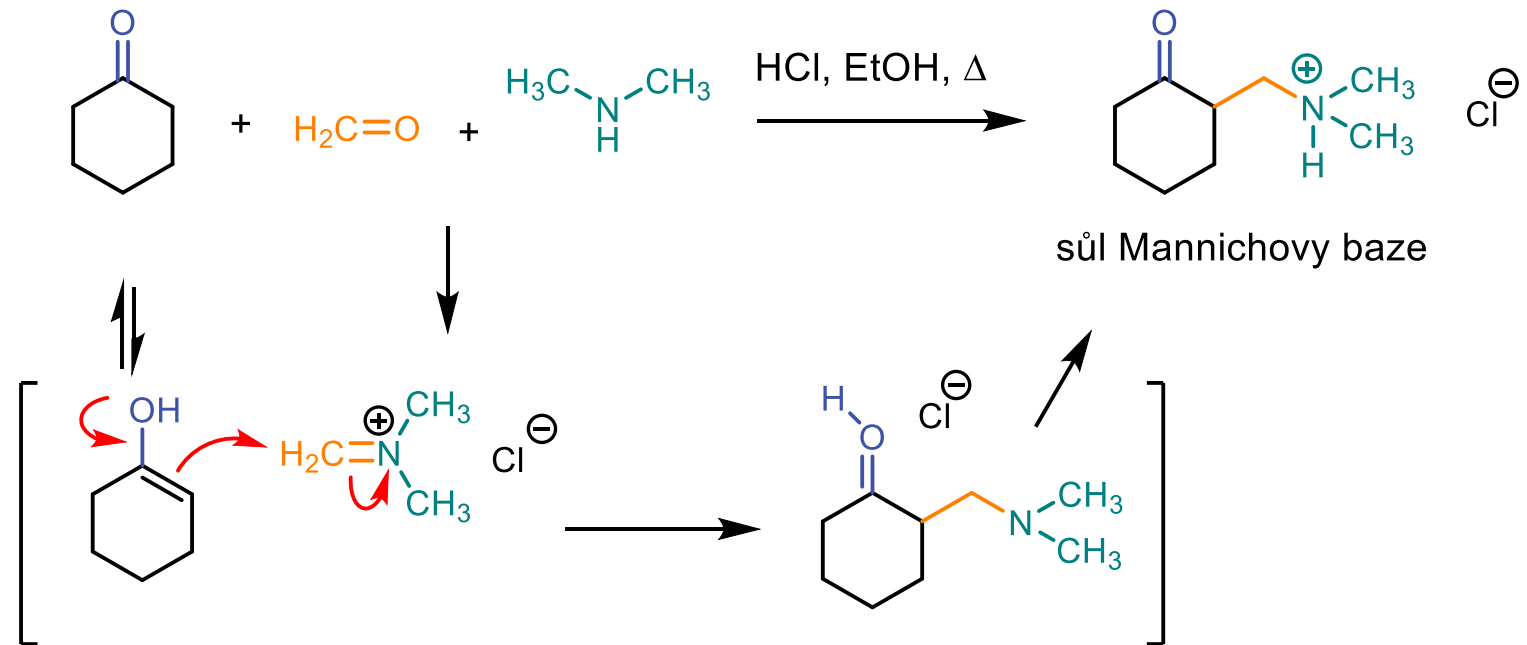


Intramolekulární Claisenova kondenzace – Dieckmannova reakce

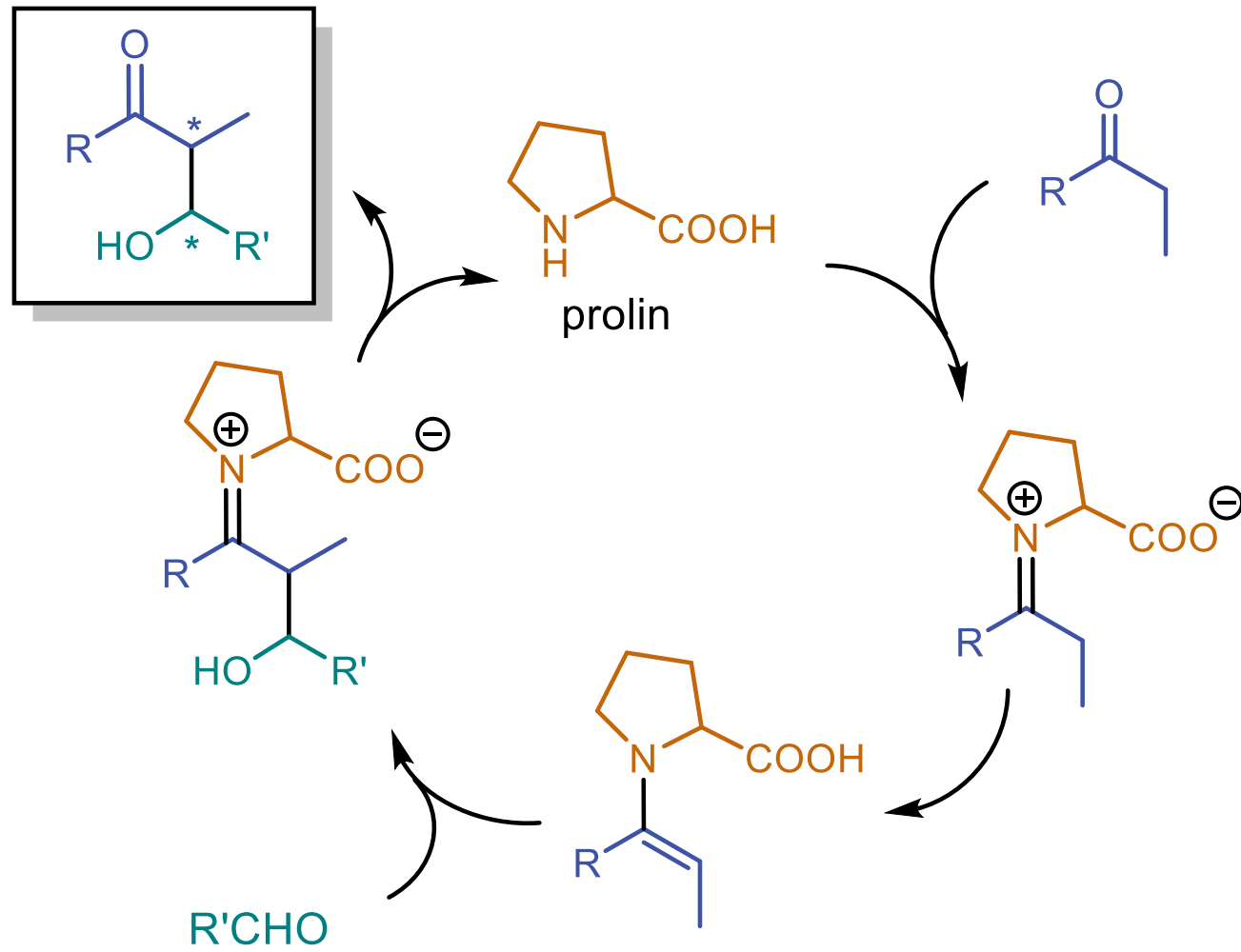


β-ketoestery jsou užitečné intermediáty pro alkylace a dekarboxylace

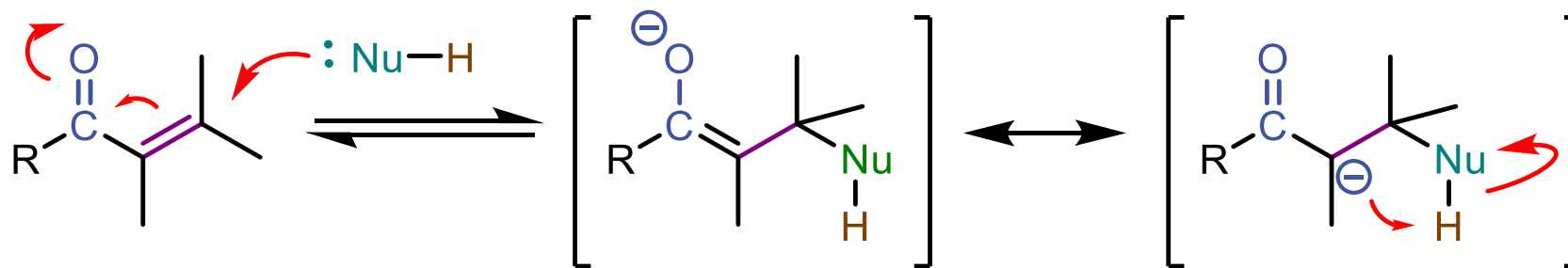
Mannichova reakce



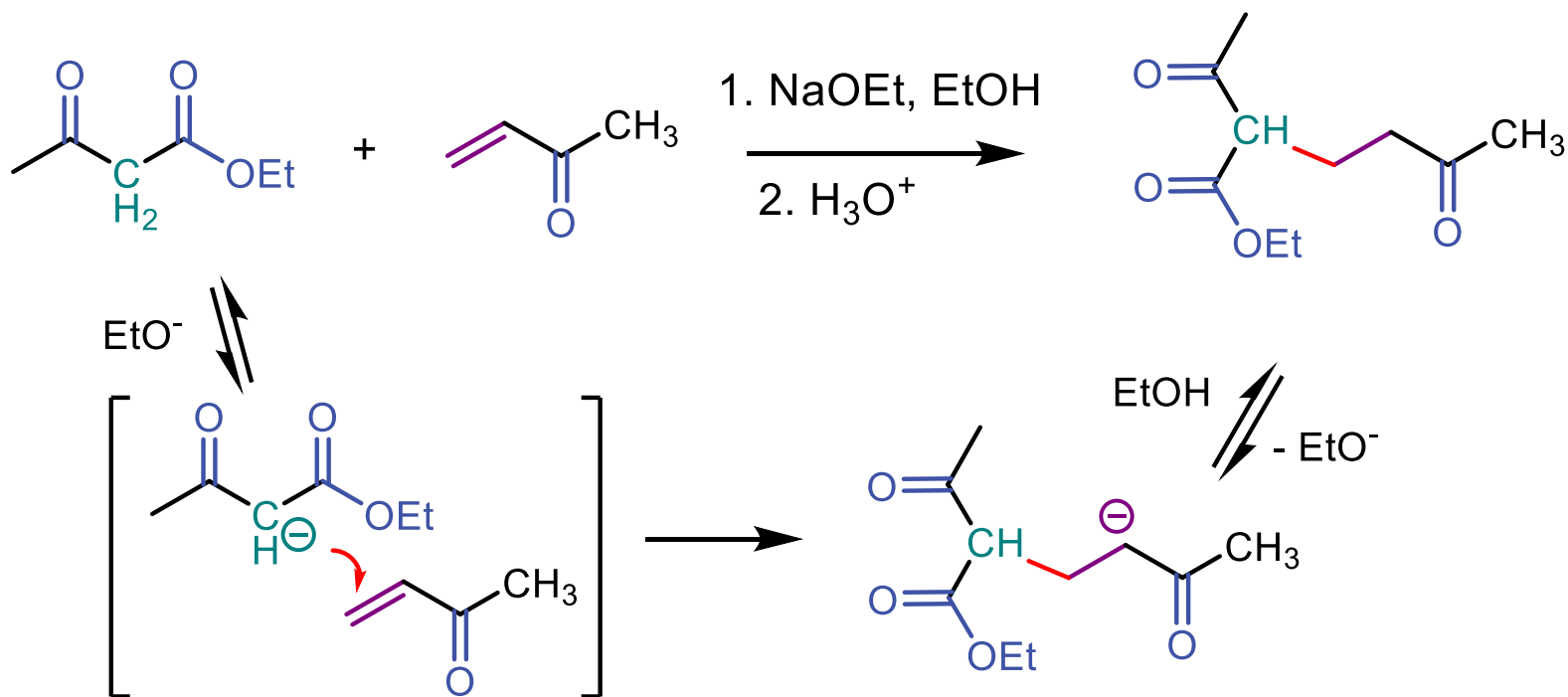
Aldolizace - organokatalýza



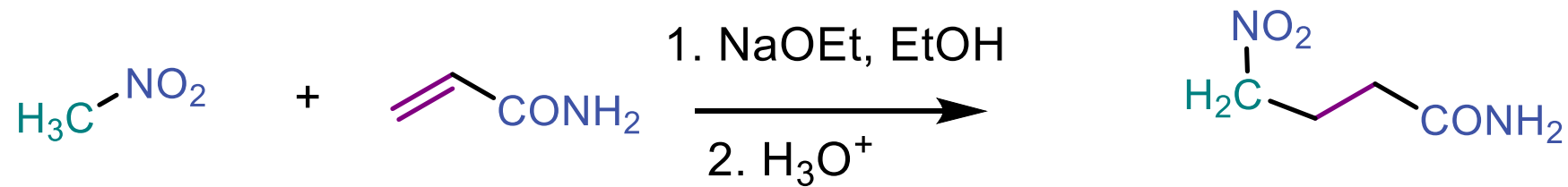
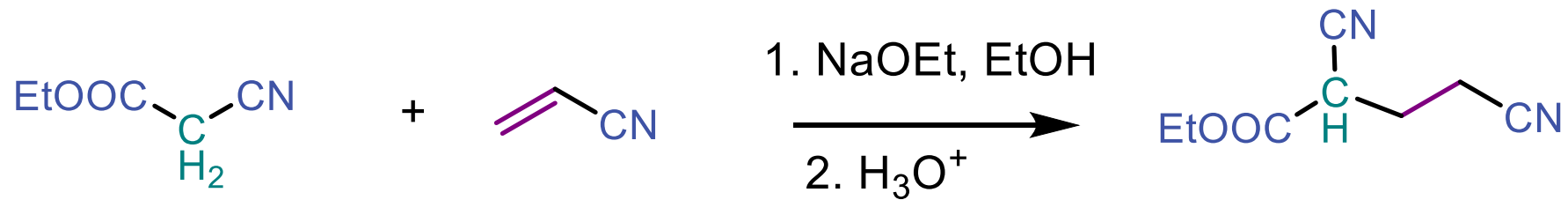
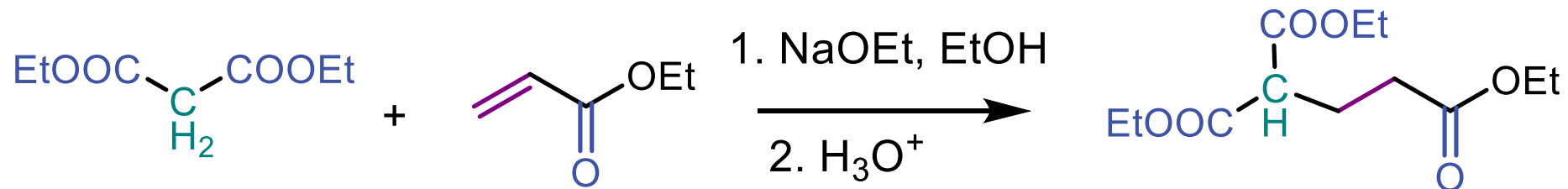
Konjugovaná adice na α,β -nenasycené karbonylové sloučeniny



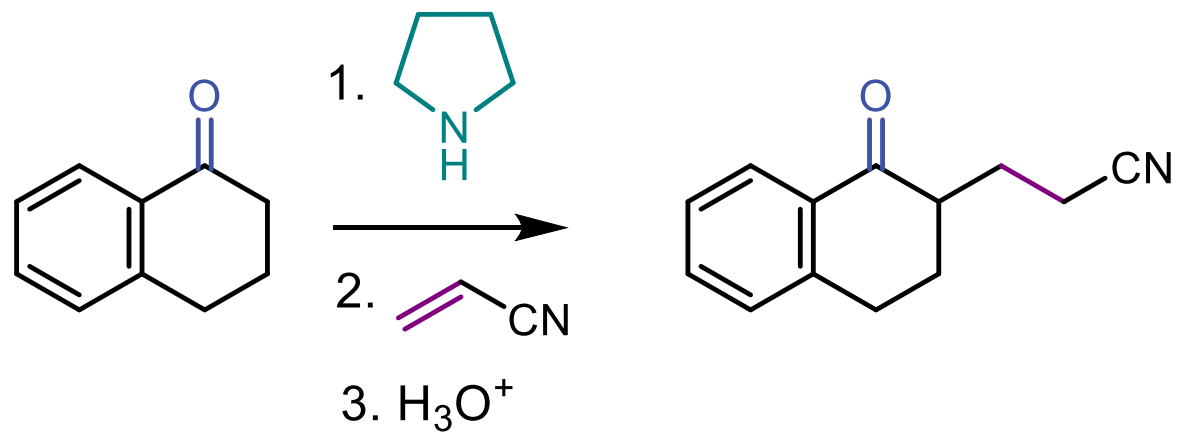
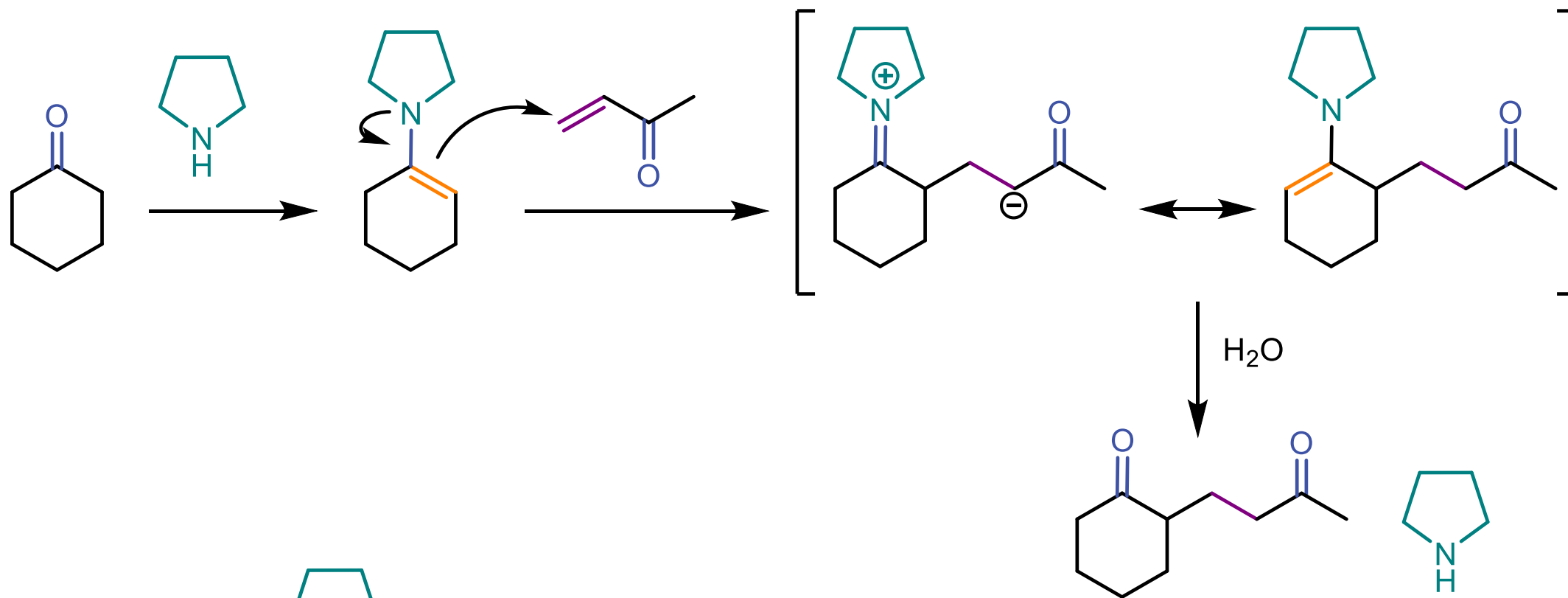
Michaelova adice - konjugovaná adice enolátů na α,β -nenasycené karbonylové sloučeniny



Michaelova adice – další příklady



Storkova reakce - Michaelova adice enaminů



Robinsonova anelace - Michaelova adice + aldolová kondenzace

