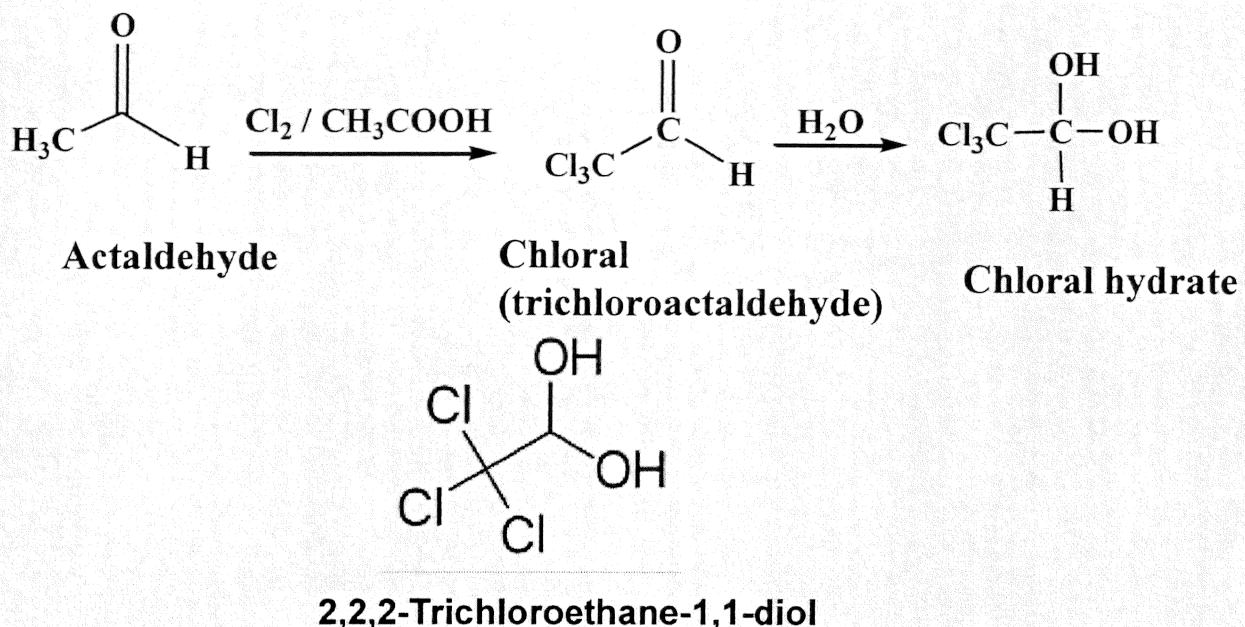
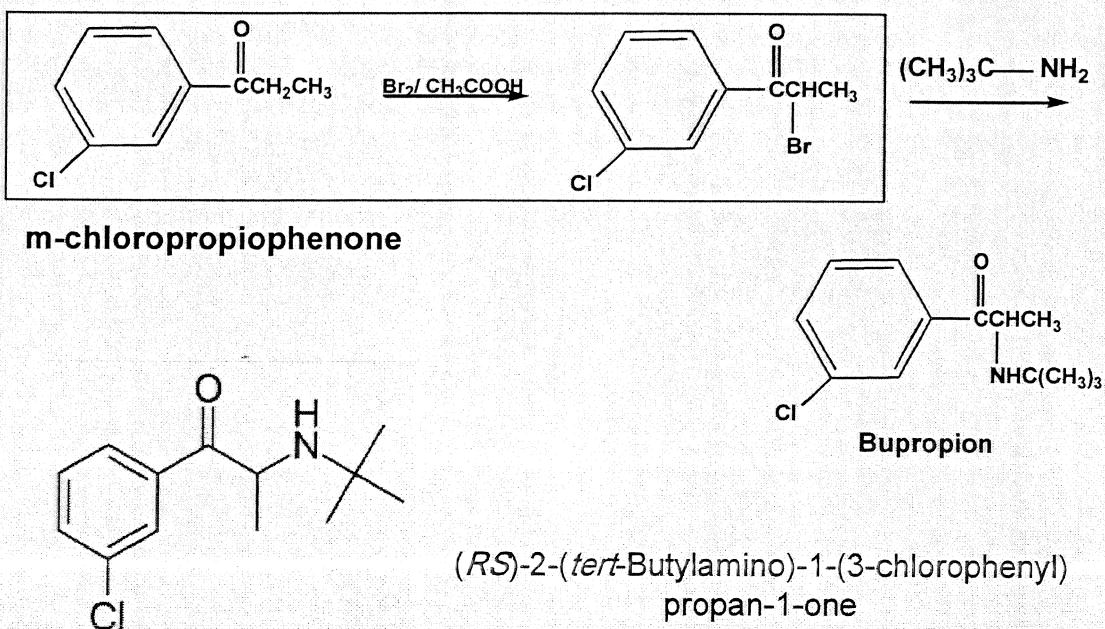


α -Bromination : Synthesis of Sedative-hypnotic chloral hydrate



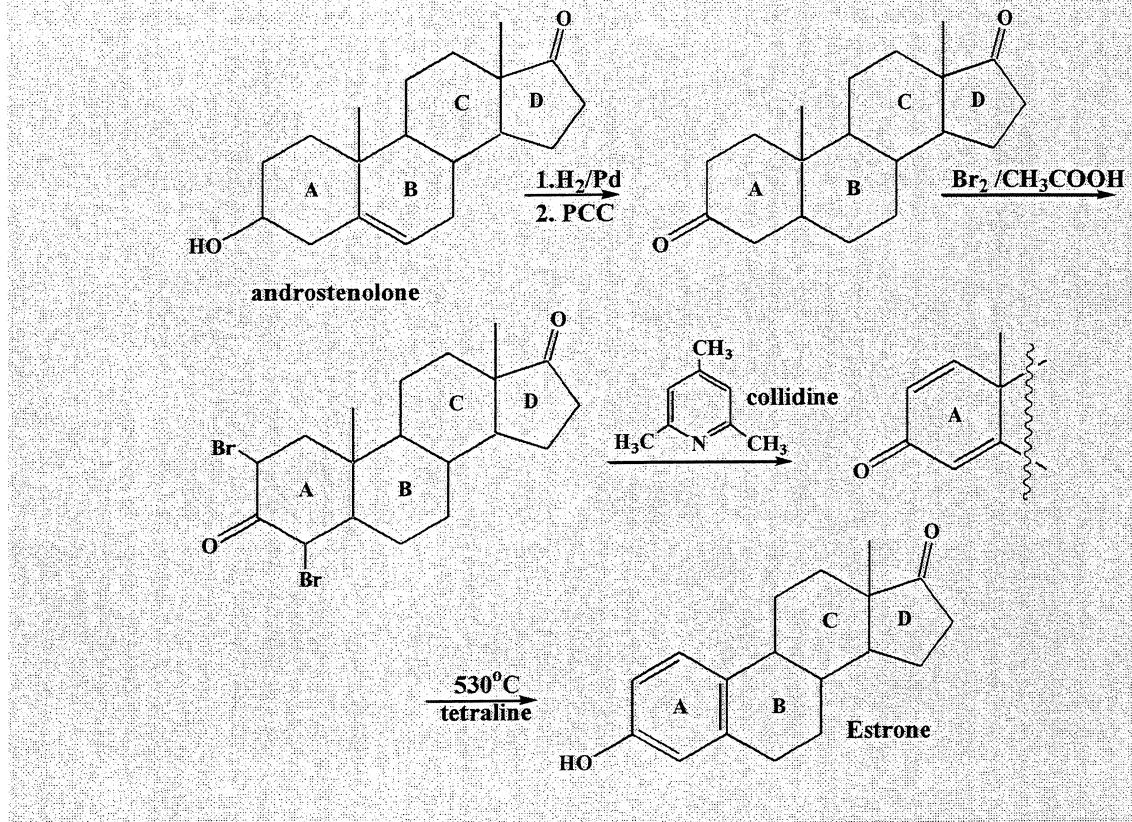
Action and use: Hypnotic and sedative for insomnia

α -Bromination: Synthesis of the antidepressant bupropion

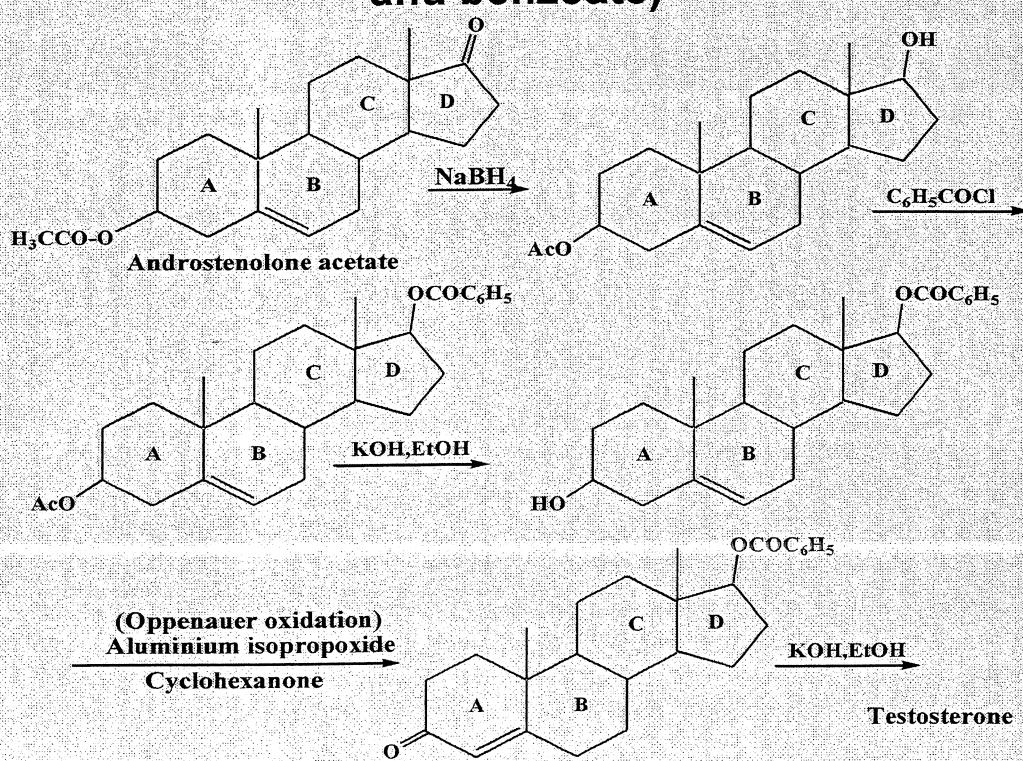


- Believed to restore Norepinephrine

**α- Bromination: Synthesis of Estrone from androstenolone
(Aromatization of ring A via dienone system))**

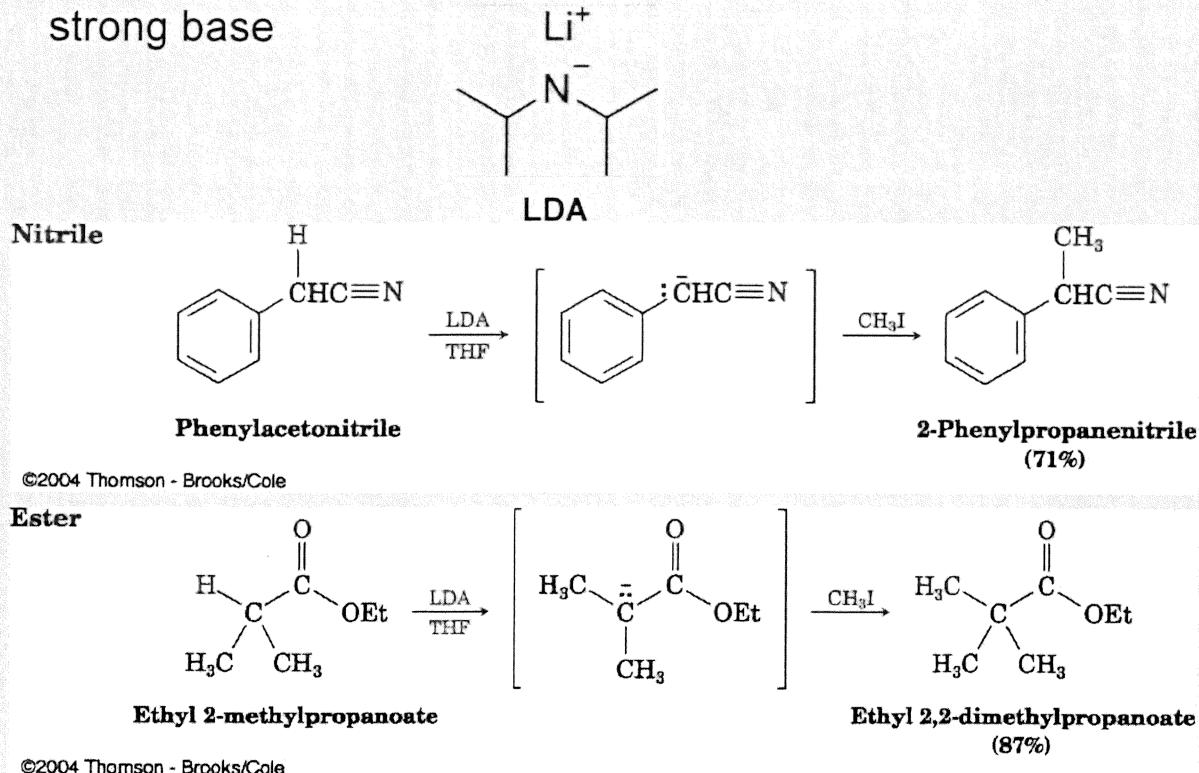


**Synthesis of Testosterone from androstenolone acetate
(protection of alcohol function by conversion to acetate
and benzoate)**



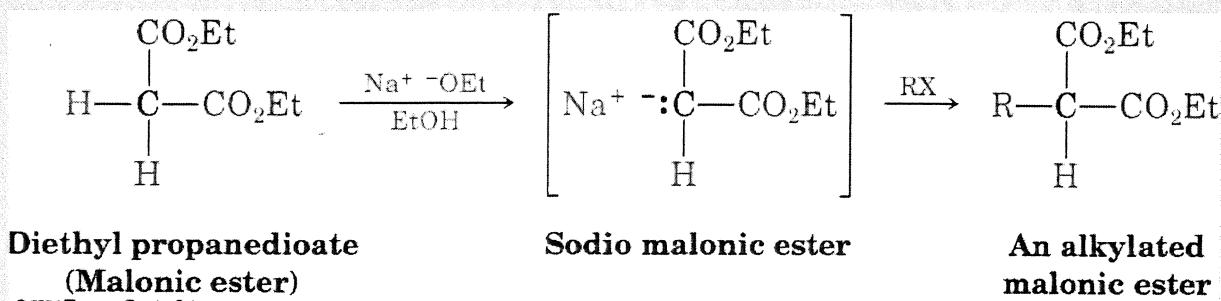
α - Alkylation of Ketones, nitriles and esters

- LDA : Lithium diisobutylamide is a sterically hindered strong base



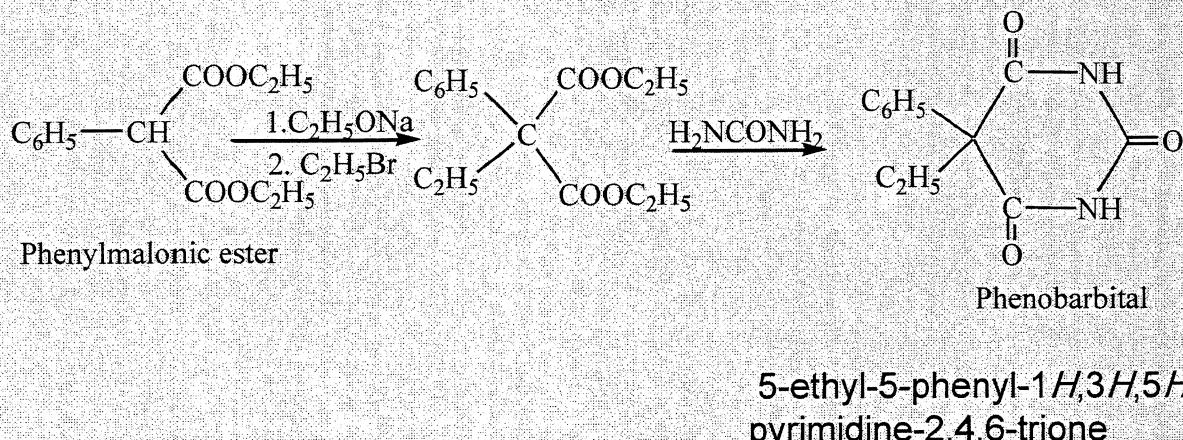
Alpha alkylation of malonic ester : synthesis of phenobarbital

- Alkylation of malonic ester



Alpha alkylation of malonic ester : synthesis of phenobarbital

- Alkylation of phenylmalonic ester followed by condensation with urea

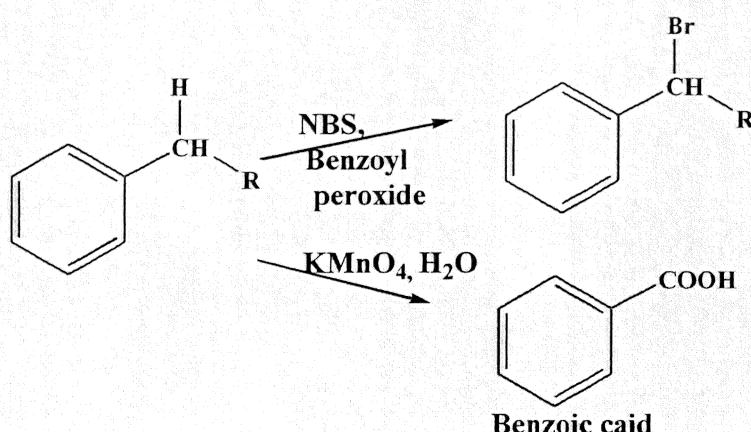


Reactions of alkylbenzenes

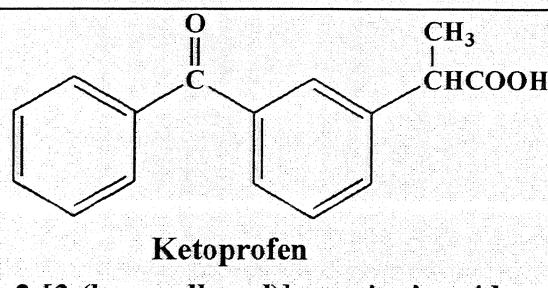
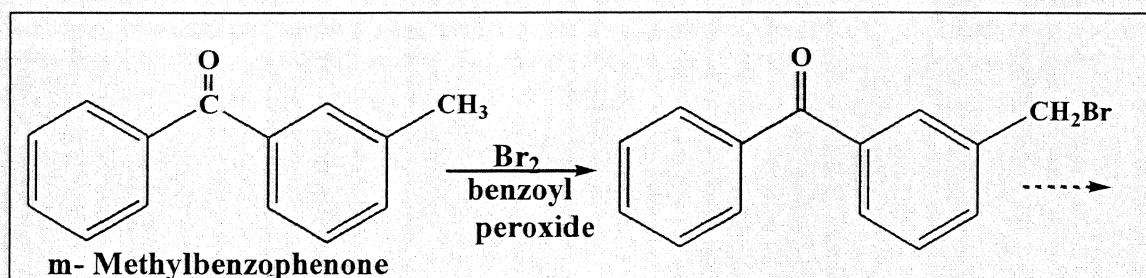
Halogenation and oxidation reactions at benzylic carbon

Halogenation and oxidation of alkylbenzenes

- Benzylic bromination at alpha to aromatic ring:
 - Benzoyl peroxide ($C_6H_5CO_2$)₂ is radical generator
 - NBS (N-Bromosuccinimide) is a bromine producer
- Benzylic oxidation: oxidation at benzylic C-H to give benzoic acid (cleavage at alpha)



Benzylic halogenation, Synthesis of the NSAID ketoprofen





Drug Synthesis

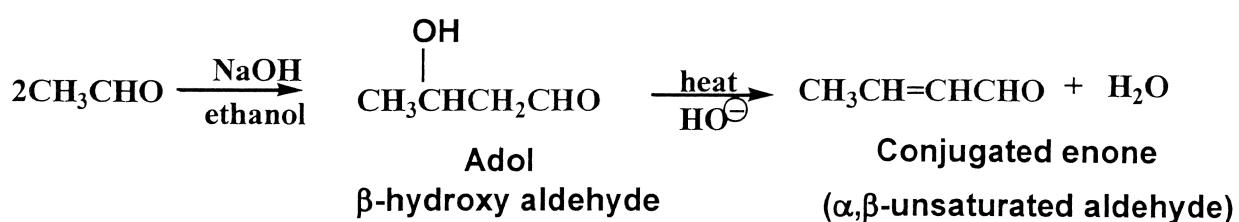
الاصطناع (التخليق) الدوائي

Some types of reactions used in drug synthesis

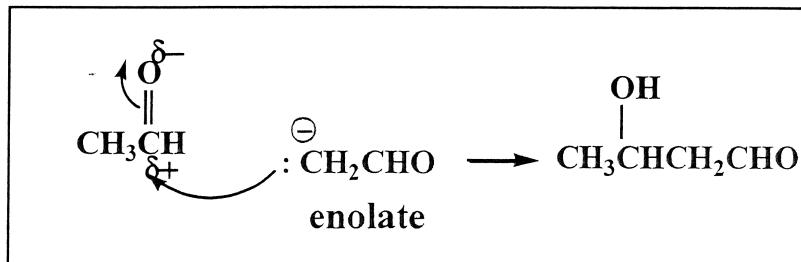
9. Carbonyl Condensation Reactions

Aldol condensation of aldehydes and ketones

Addition of enolate to carbonyl ,then dehydration



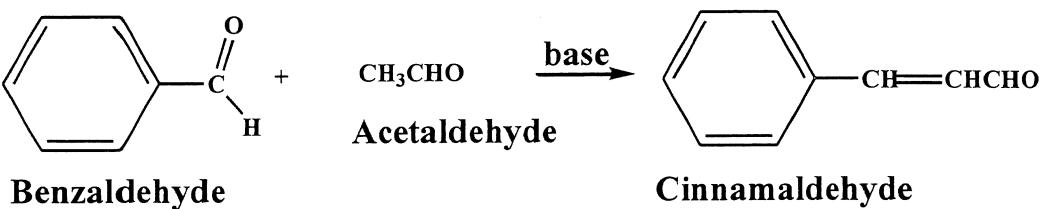
Mechanism



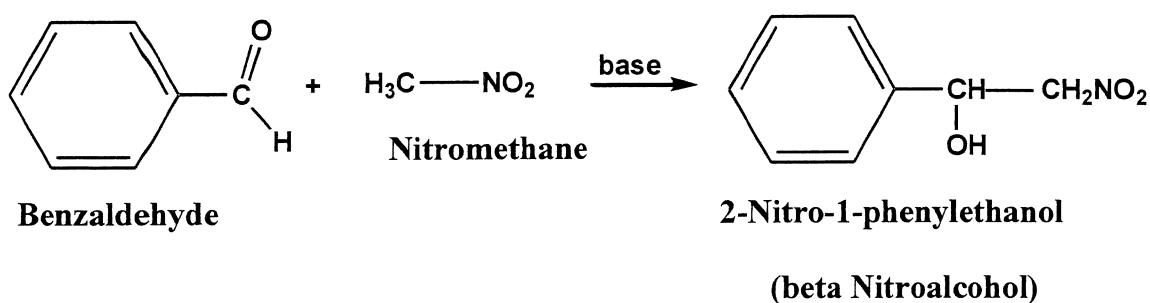
Net result: elimination of H_2O molecule and formation of Enone



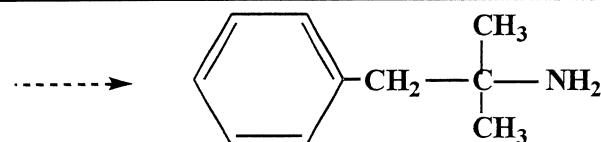
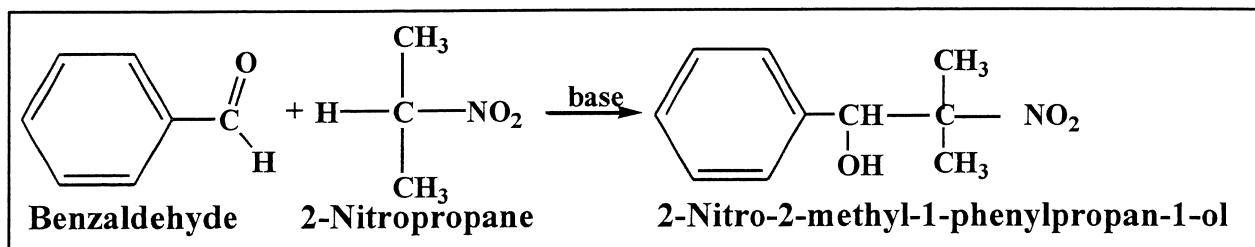
Mixed aldol condensation



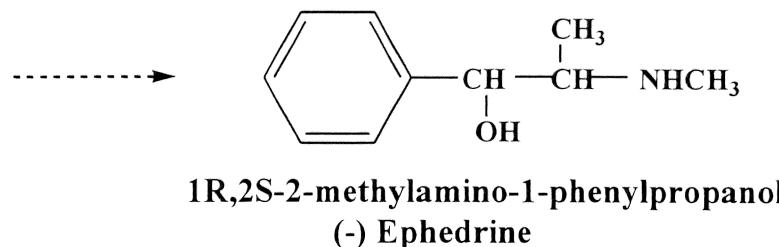
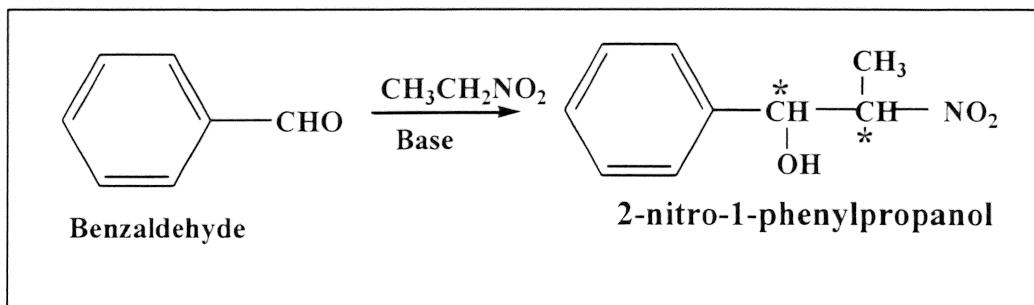
Aldol-like condensation



Aldol-like condensation, The synthesis of the CNS stimulant anorectic phentermine)



Aldol-like condensation, The synthesis of the adrenergic (-) Ephedrine



Drug Synthesis

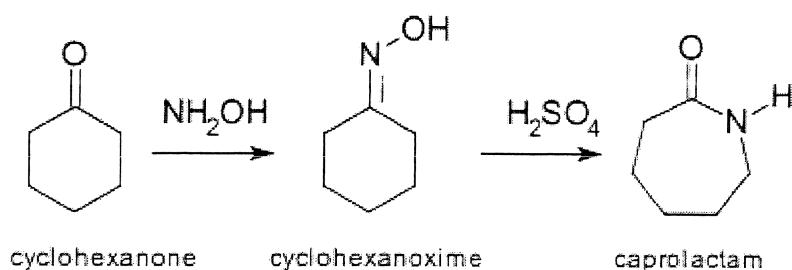
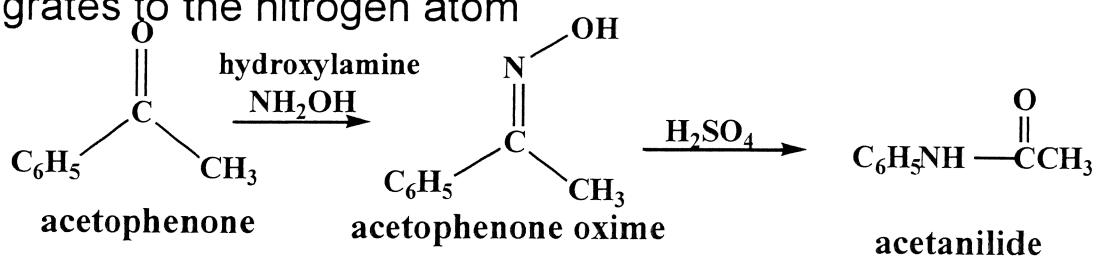
الاصطناع (التخلق) الدوائي

Some types of reactions used in drug synthesis

10. Rearrangement reactions

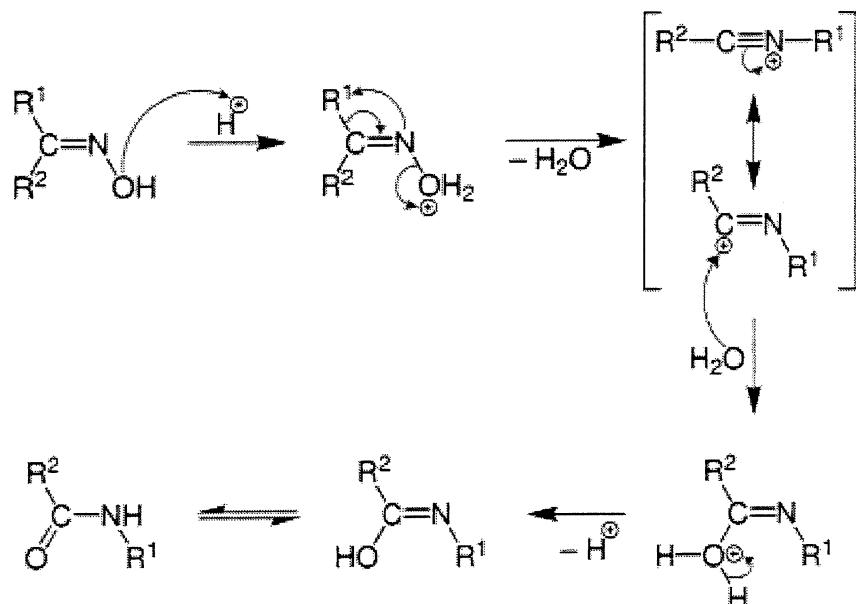
Beckmann rearrangement of Oximes: Formation of Amides or Lactams

- Oximes by heating acidic medium yield amides or lactams
- Reaction is stereospecific; the alkyl at anti to OH migrates to the nitrogen atom



Beckmann rearrangement: Reaction mechanism

- Reaction is stereospecific; the alkyl at anti to OH migrates to the nitrogen atom



Beckman rearrangement,synthesis of the Hemostatic 6-aminocaproic acid

