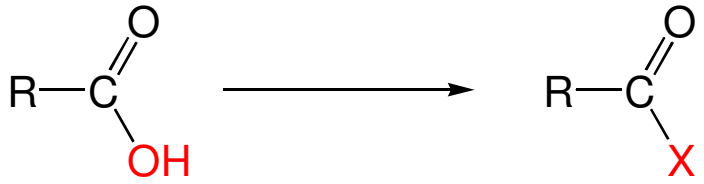
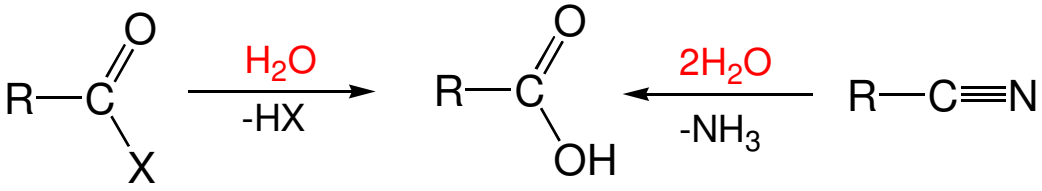
KARBONSAVSZÁRMAZÉKOK

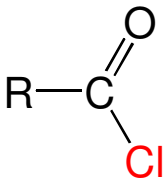
Levezetés



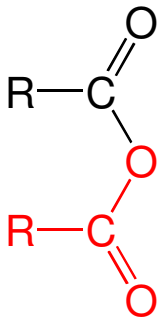
Kémiai rokonság



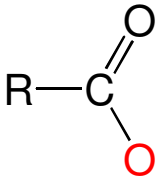
A karbonsavszármazékok típusai



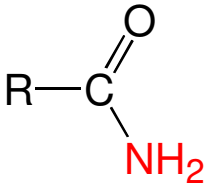
karbonsavklorid



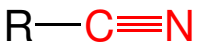
karbonsavanhidrid



karbonsavészter



karbonsavamid



karbonsavnitril

Példák

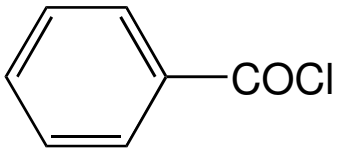
karbonsavkloridok

CH_3COCl

acetil-klorid

Cl-CO-CO-Cl

oxalil-klorid



benzoil-klorid

karbonsavanhidridek

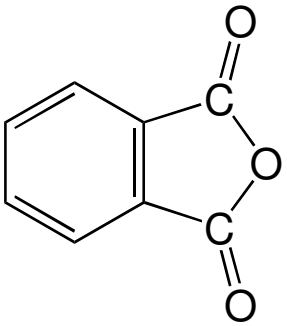
CH_3-CO-O-CO-CH_3

ecetsav-anhidrid

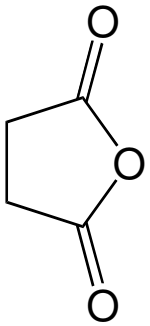
CH_3-CO-O-CO-C_2H_5

ecetsav-propionsav-anhidrid

gyűrűs anhidridek



ftálsavanhidrid



borostyánkősav-anhidrid

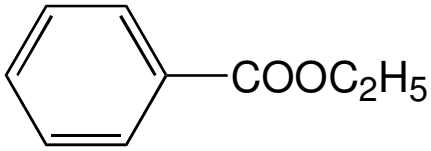
karbonsavészterek

$HCOOC_2H_5$

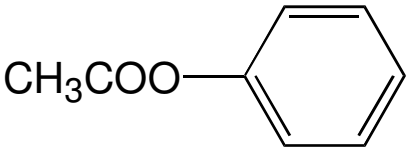
etil-formiát

CH_3COOCH_3

metil-acetát

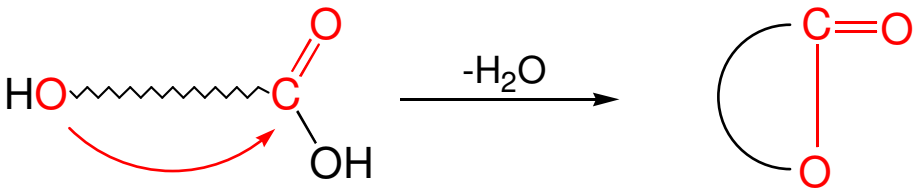


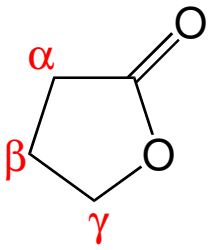
etil-benzoát



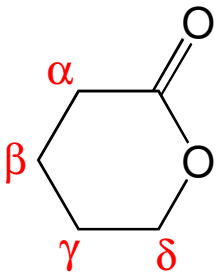
fenil-acetát

laktonok (gyűrűs észterek)





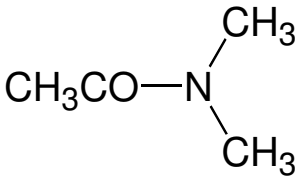
γ-butirolakton



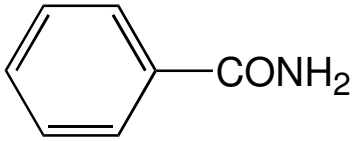
δ-valerolakton

karbonsavamidok

formamid

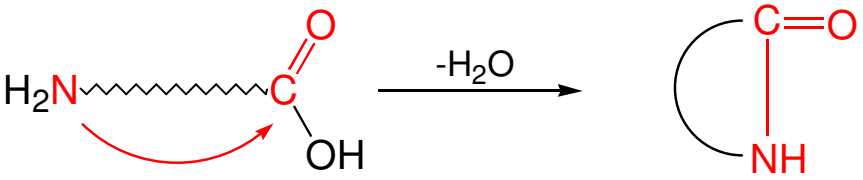


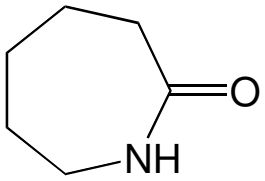
N,N-dimetilacetamid



benzamid

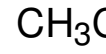
laktámok (gyűrűs amidok)



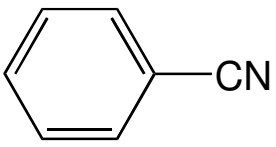


ε-kaprolaktám

karbonsavnitrilek



acetonitril

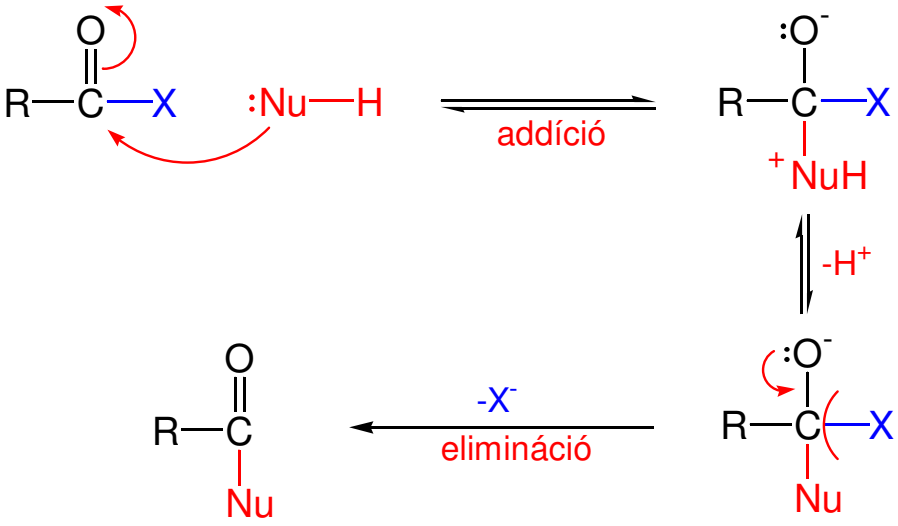


benzonitril

A KARBONSAVSZÁRMAZÉKOK REAKTIVITÁSA

Szubsztitúció a karbonil-szénatomon

Mechanizmus



Reaktivitás

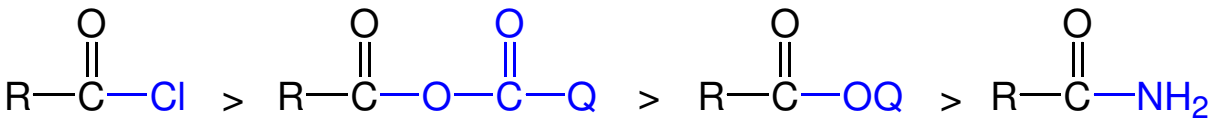
:X⁻ távozó csoport

$Cl^- > Q\text{-}COO^- > QO^- > NH_2^-$

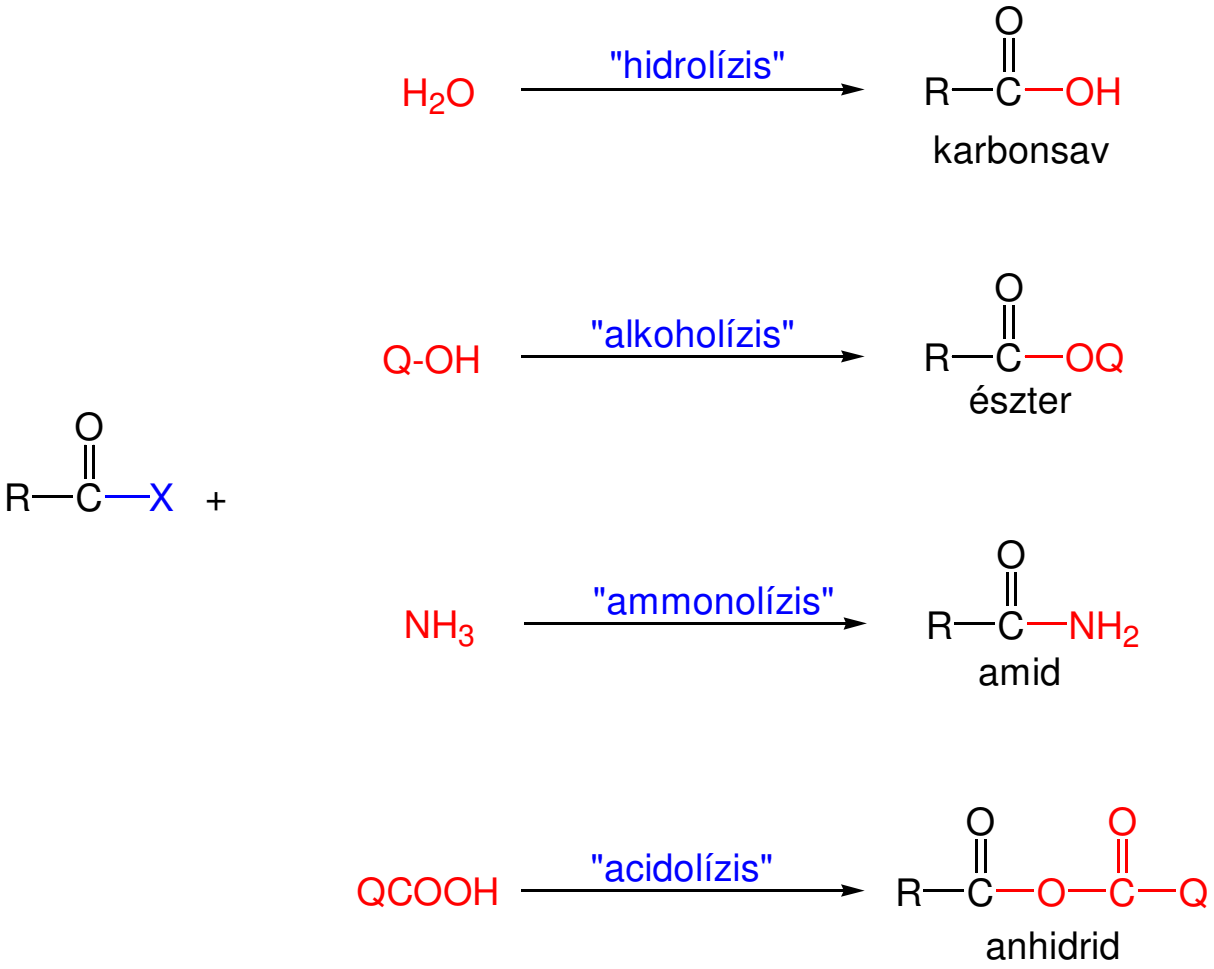
savi erősség

$HCl > Q\text{-}COOH > QOH > NH_3$

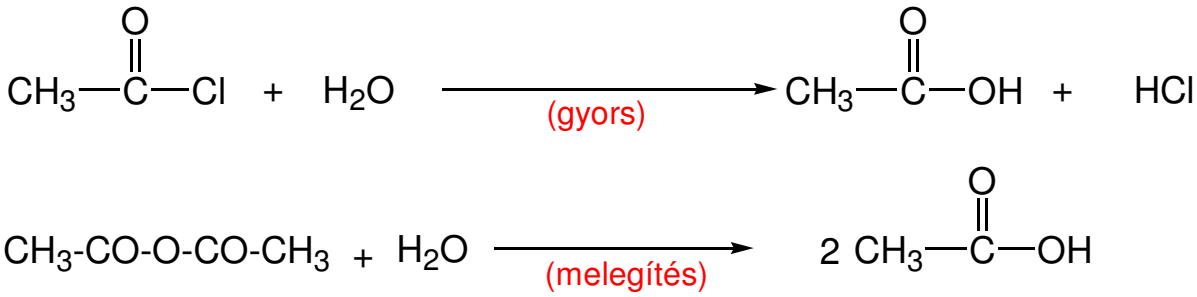
Reaktivitási sorrend



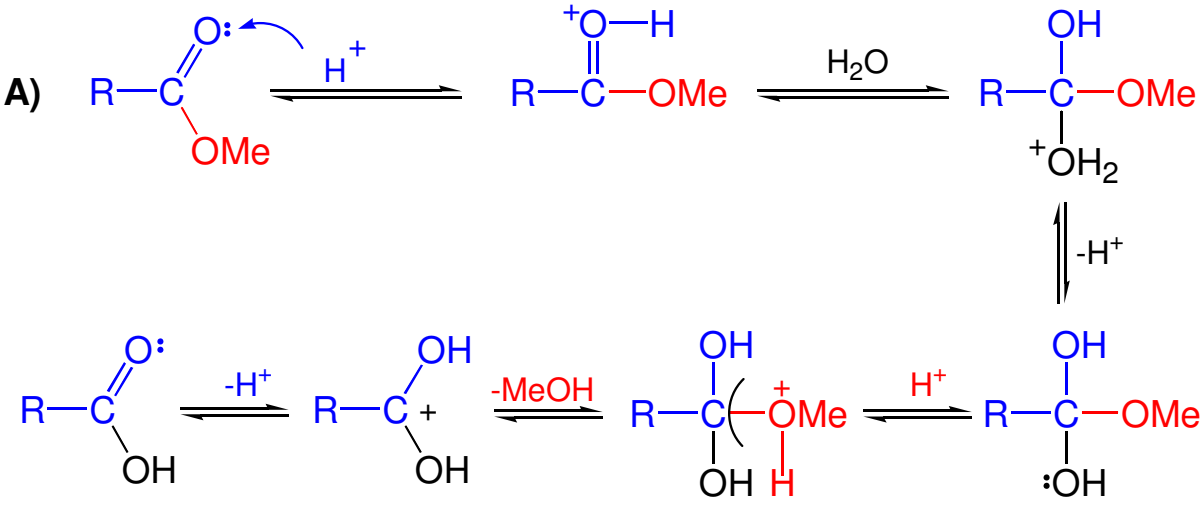
Reakciótípusok



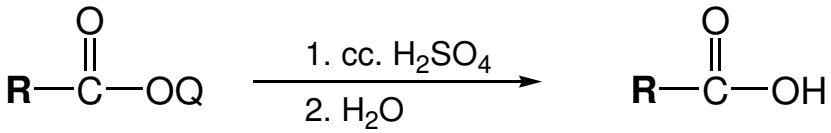
A karbonsavszármazékok hidrolízise



Az észterek savas hidrolízise

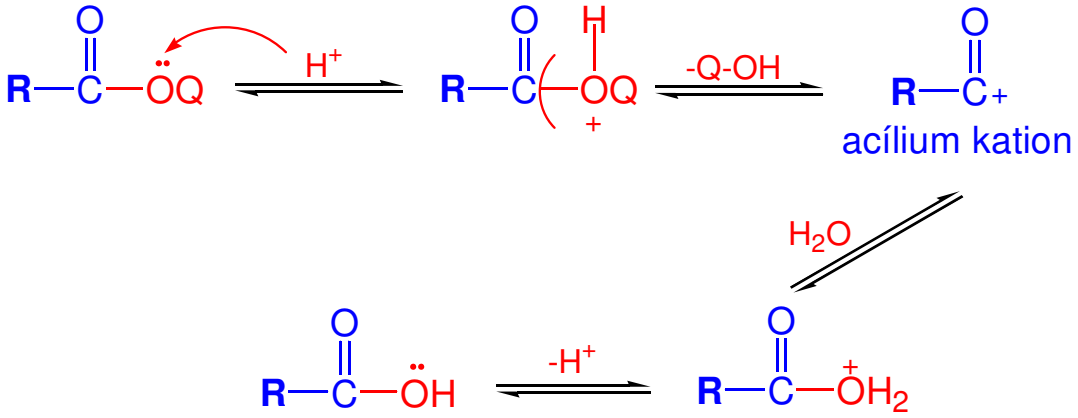


Árnyékolt karbonilcsoportot tartalmazó észterek hidrolízise

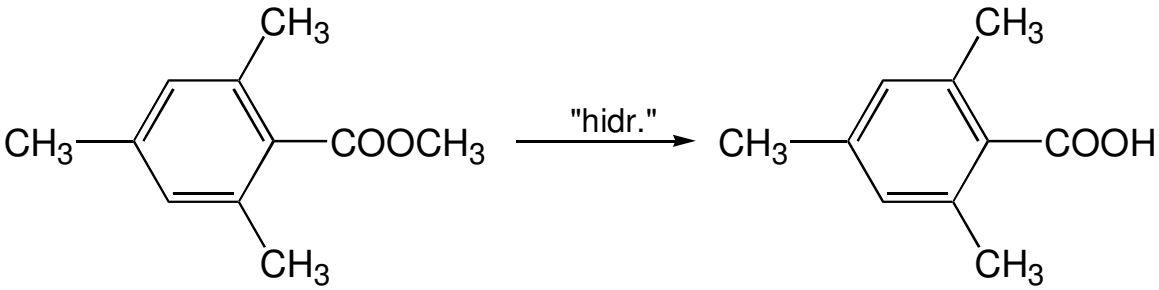


(**R**: nagy térigényű csoport)

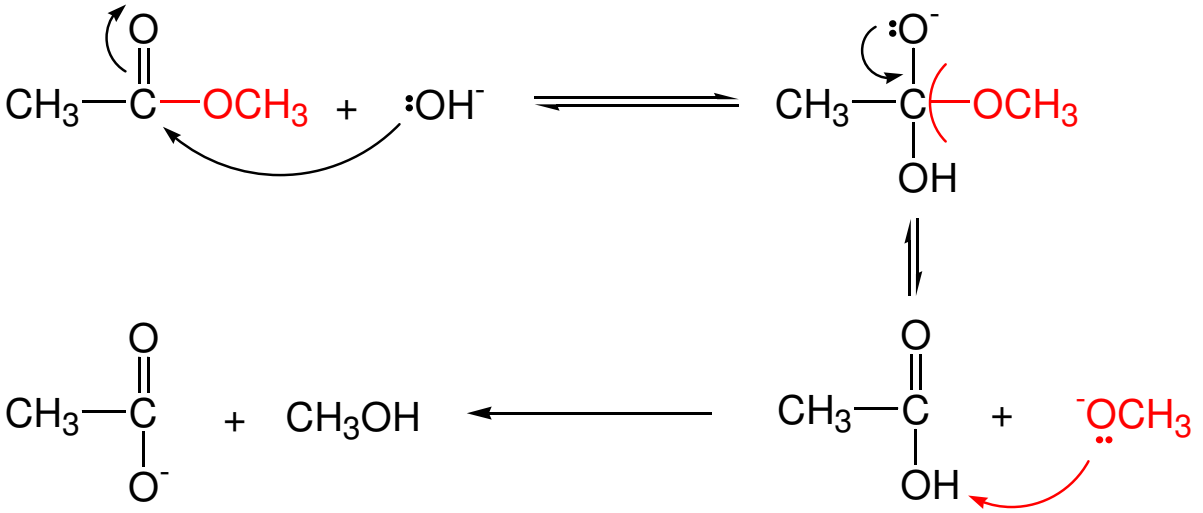
Mechanizmus



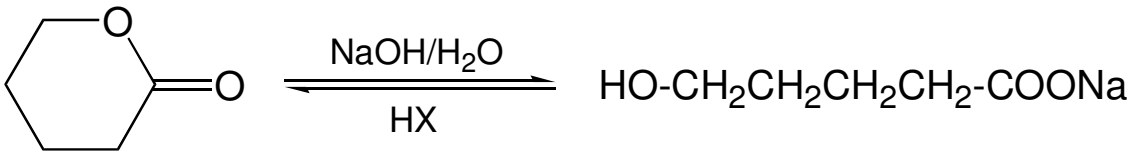
Példa



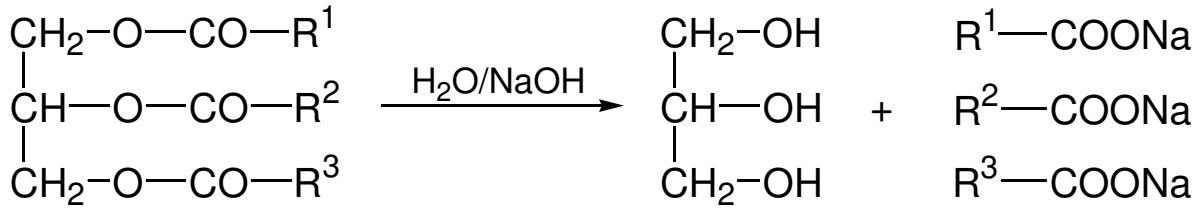
Az észterek lúgos hidrolízise (elszappanosítás)



Laktonok hidrolízise

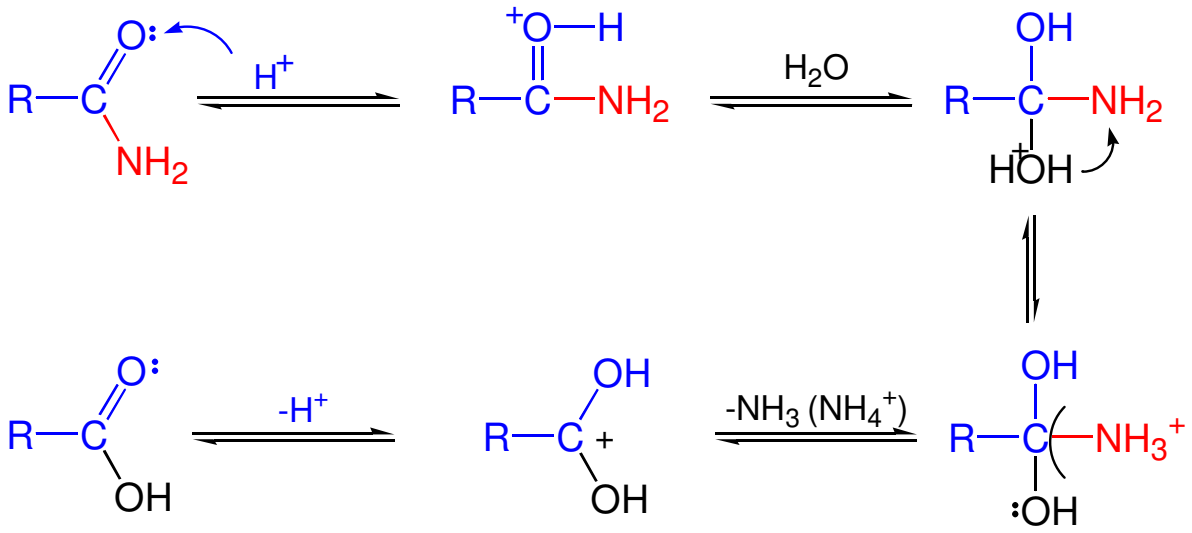


Gliceridek hidrolízise

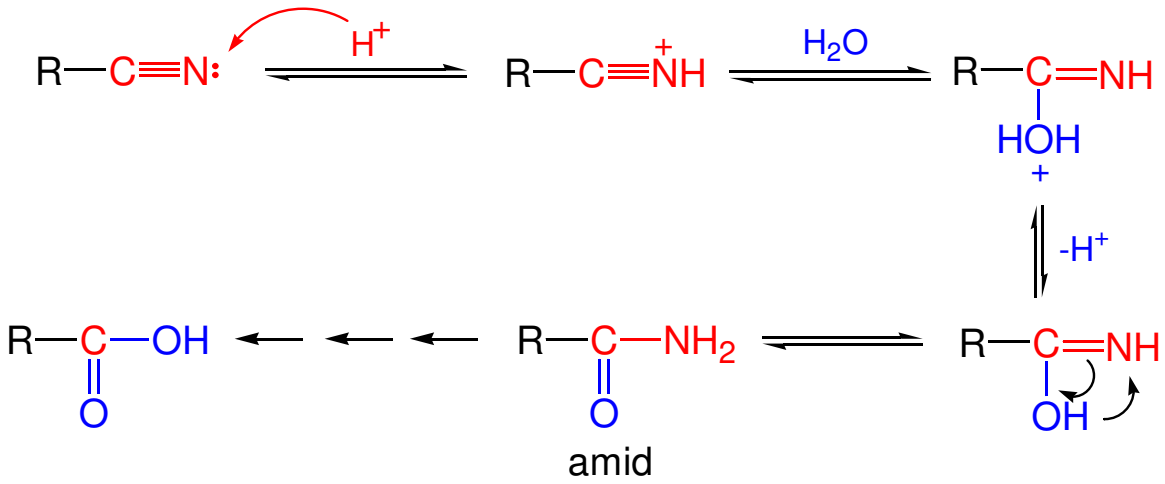


$C_{13}H_{27}COOH$	mirisztinsav
$C_{15}H_{31}COOH$	palmitinsav
$C_{17}H_{35}COOH$	sztearinsav
C_8H_{17}-CH=CH-$C_7H_{14}COOH$	olajsav

Az amidok savas hidrolízise

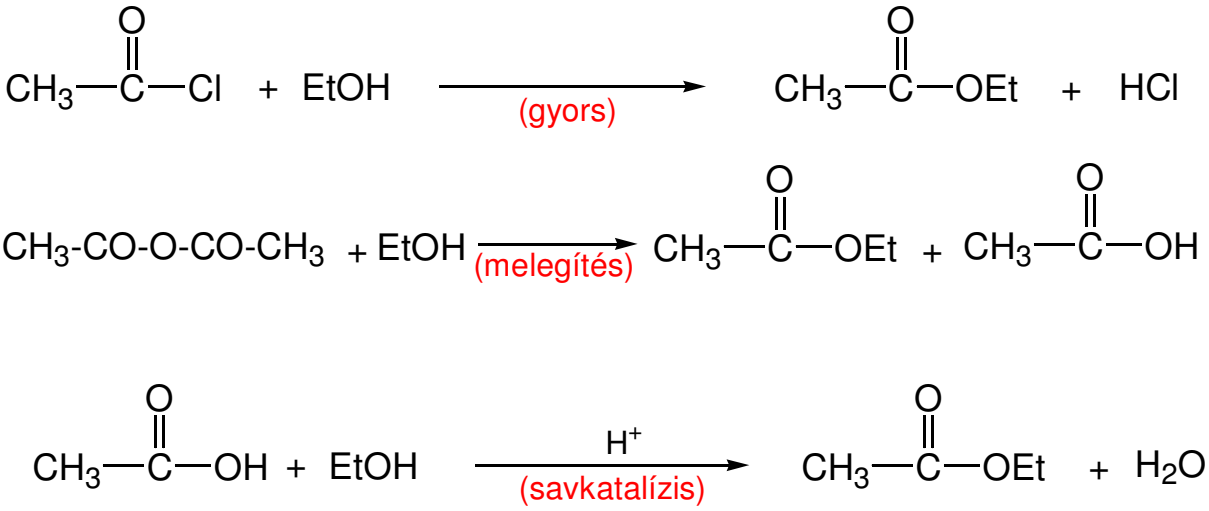


A nitrilek savas hidrolízise

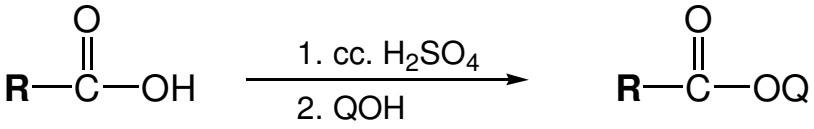


amid

A karbonsavszármazékok alkoholízise

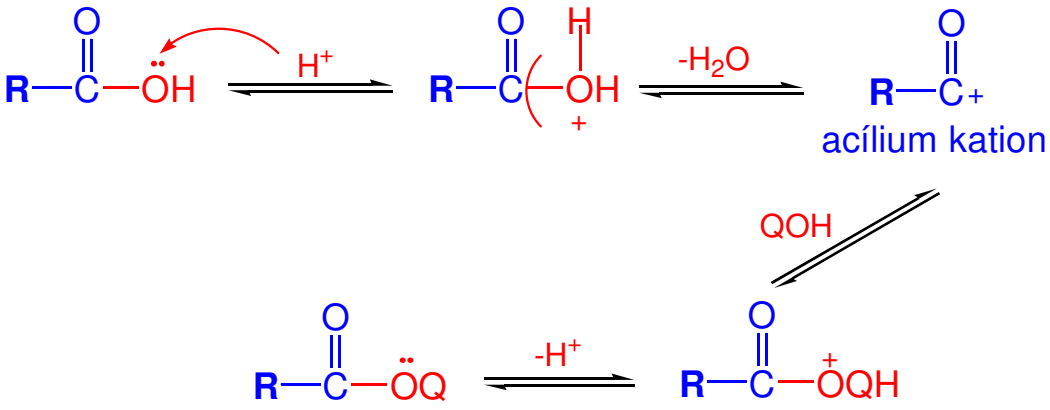


Árnyékolt karbonilcsoportot tartalmazó karbonsavak alkoholízise

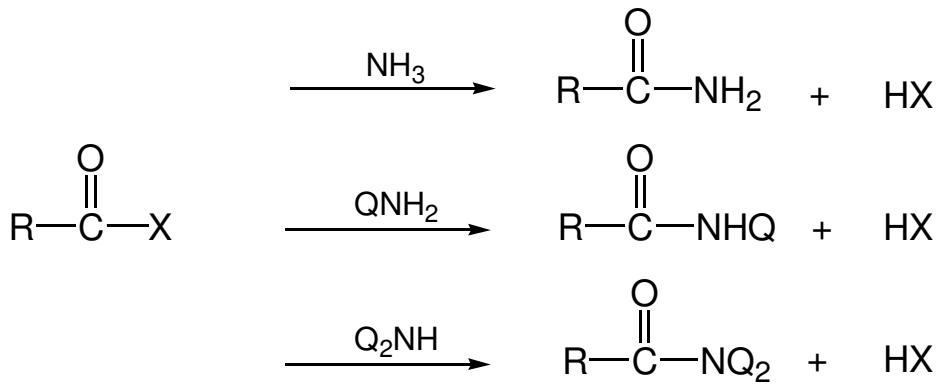


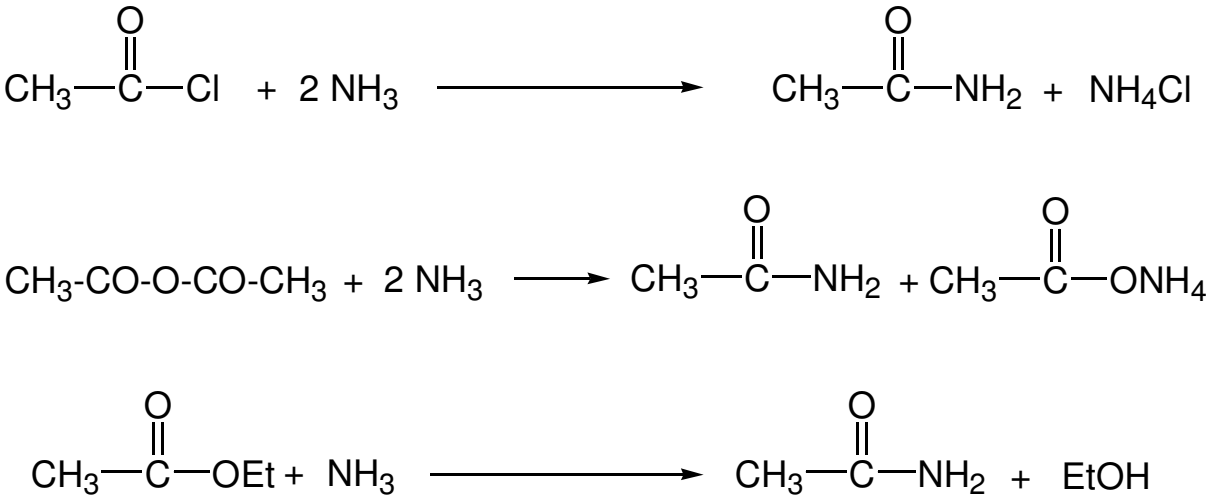
(**R**: nagy térigényű csoport)

Mechanizmus

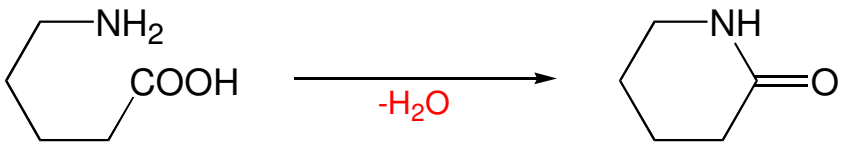


A karbonsavszármazékok ammonolízise

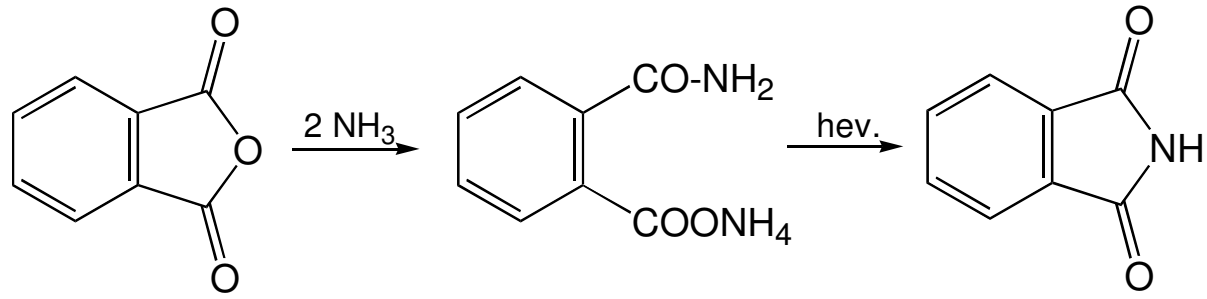




Laktámok



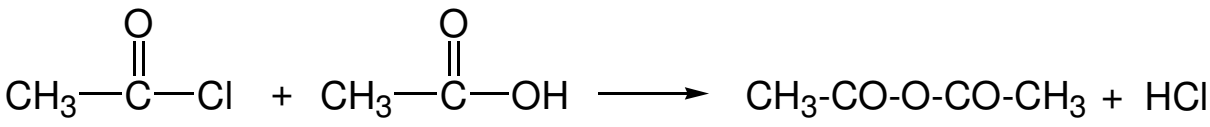
Gyűrűs anhidridek reakciója ammóniával



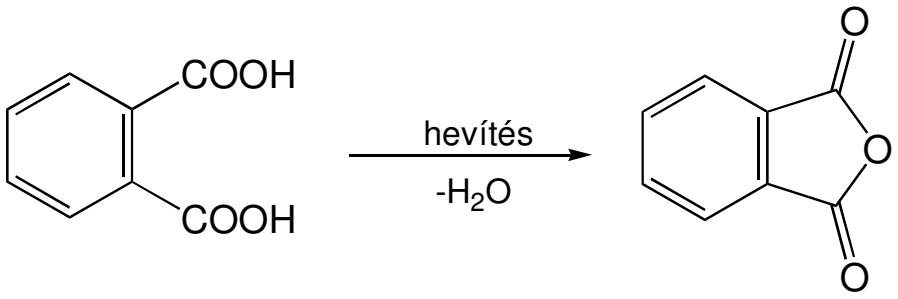
ftálsavanhidrid ftálimid

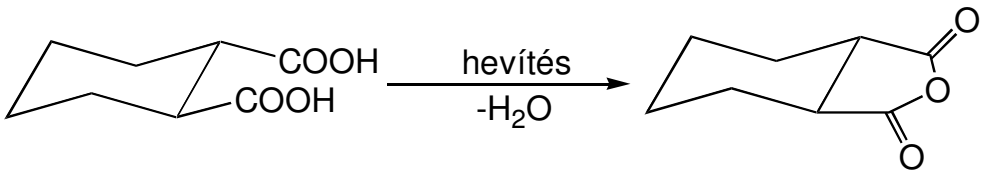
Savanhidridek előállítása

Savkloridok reakciója karbonsavakkal (acidolízis)



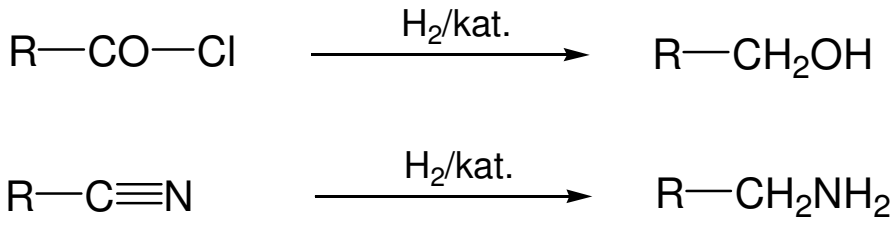
Dikarbonsavak átalakítása gyűrűs anhidridekké



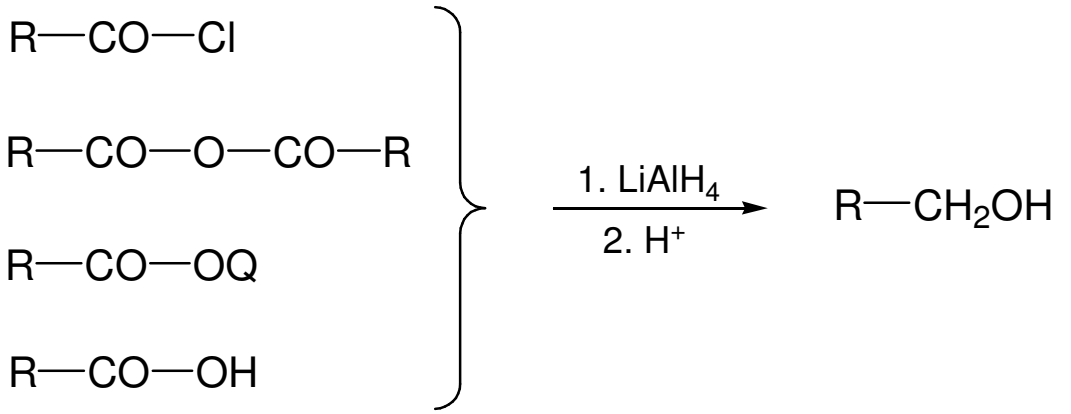


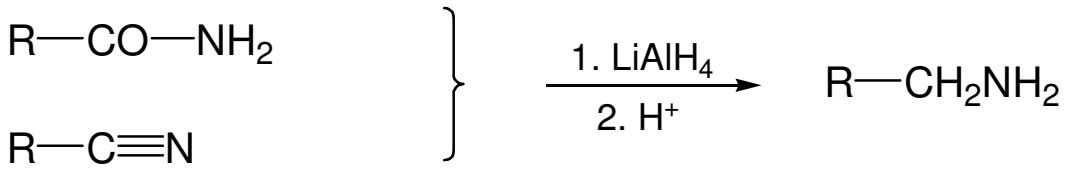
A karbonsavszármazékok redukciója

Katalitikus hidrogénezés

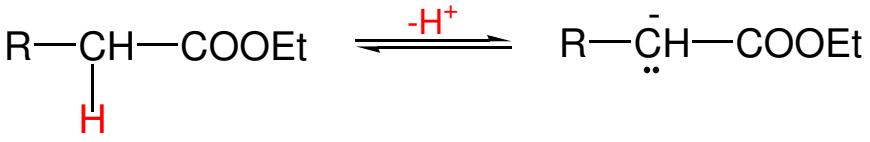


Redukció $LiAlH_4$-del

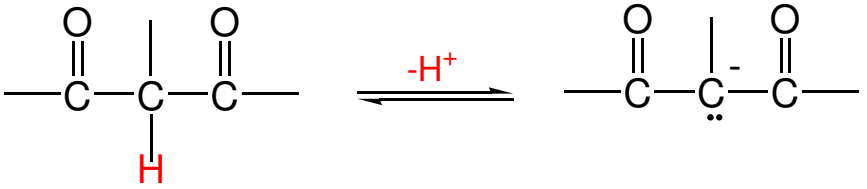




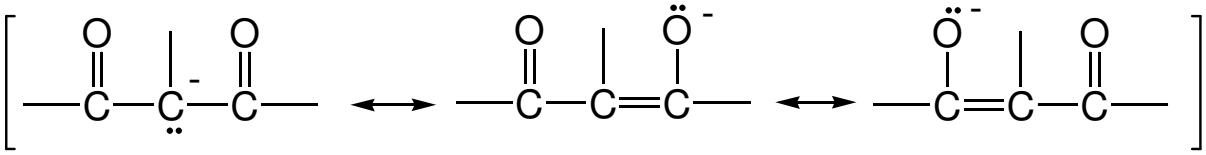
Az észterek savassága



$pK_a > 20$



$pK_a = 9\text{-}11$



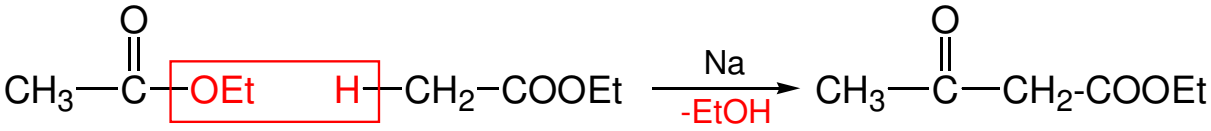
EtOOC—CH_2—COOEt $\xrightarrow{EtO^-}$ EtOOC—CH—COOEt

malonészter

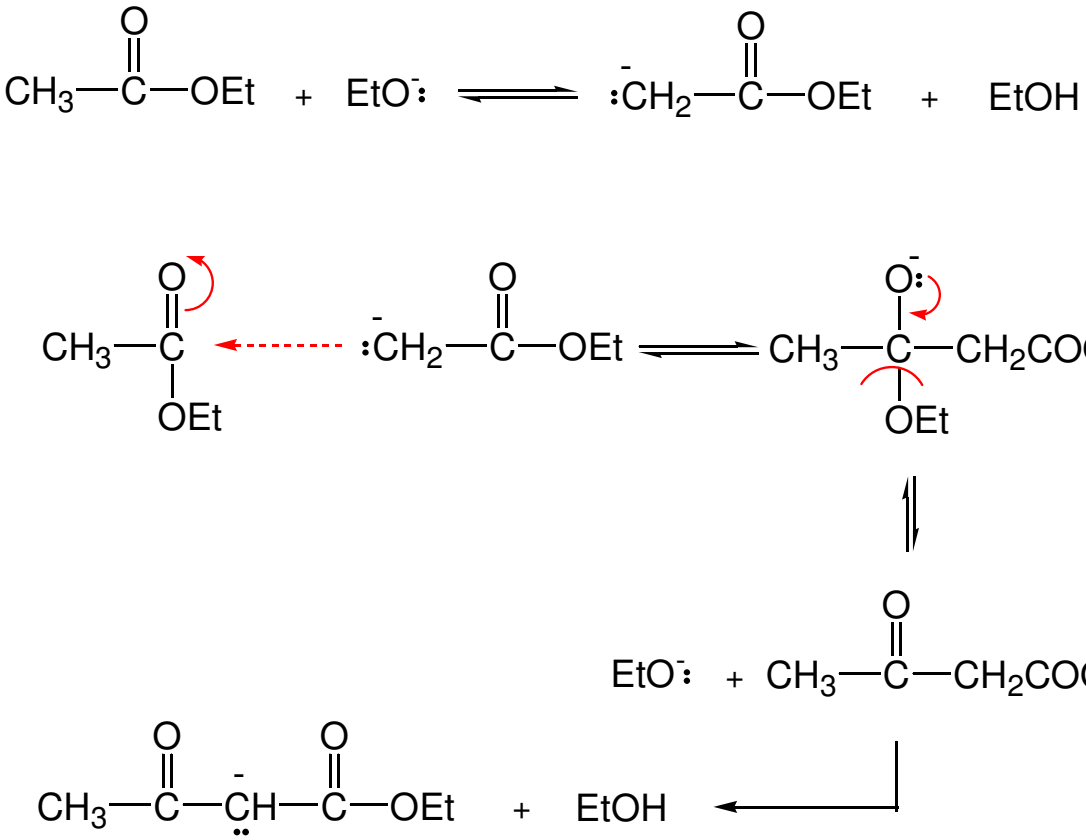
H_3C—OC—CH_2—COOEt $\xrightarrow{EtO^-}$ H_3C—OC—CH—COOEt

acetecetészter

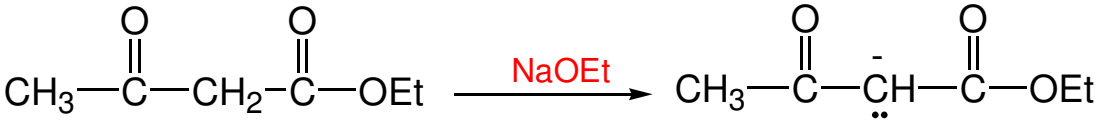
Claisen kondenzáció

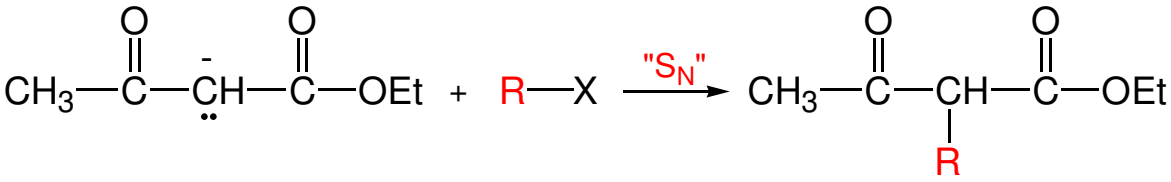


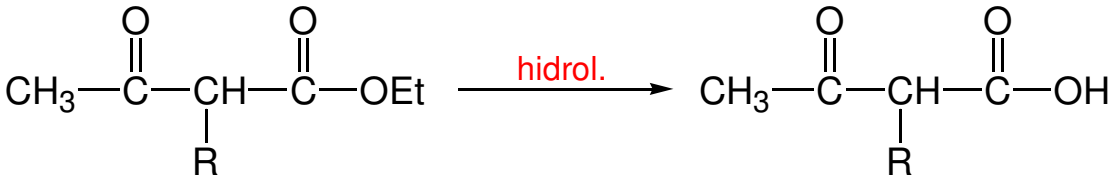
Mechanizmus

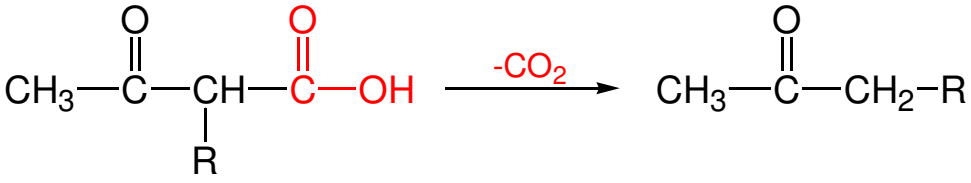


Acetecetészter szintézisek

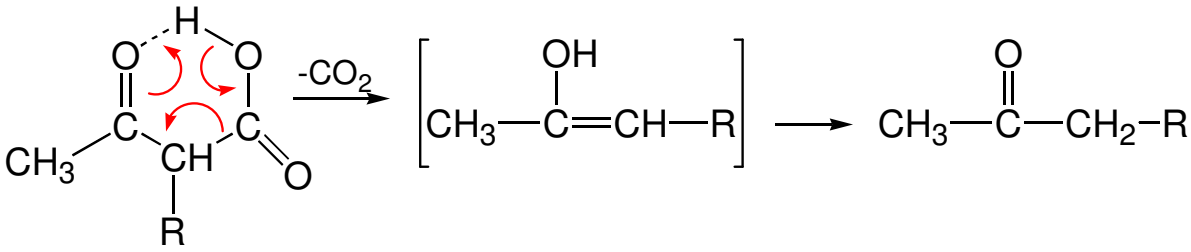


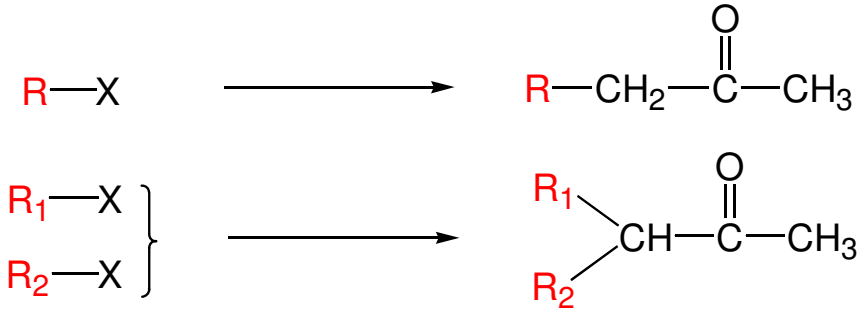




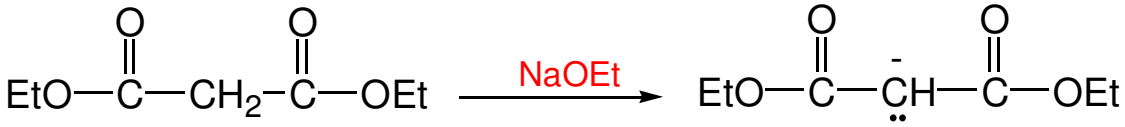


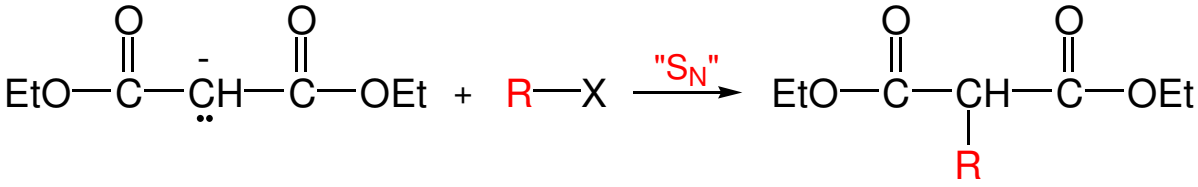
Dekarboxilezés

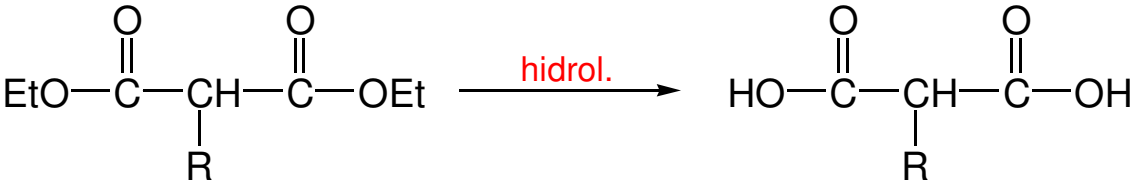


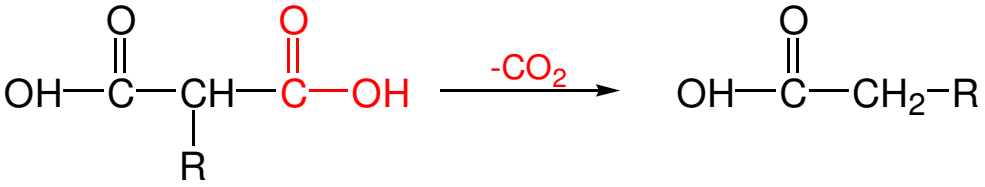


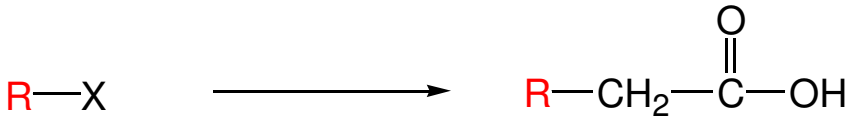
Malonészter szintézisek

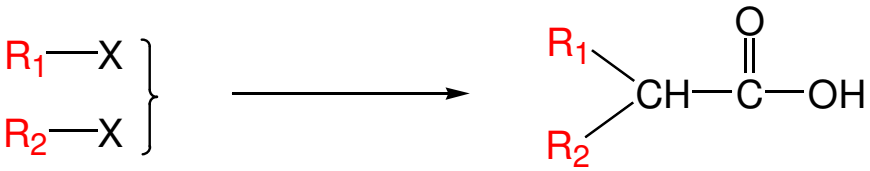












Szénsavszármazékok

Levezetés