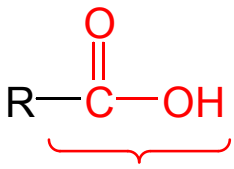
KARBONSAVAK



karboxilcsoport

Példák

A) Nyílt láncú telített monokarbonsavak (zsírsavak)

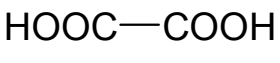
"alkánsav" pl. metánsav, etánsav, propánsav...

Homológ sor

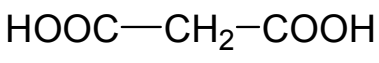
$HCOOH$ hangyasav	$CH_3CH_2CH_2CH_2COOH$ valeriánsav
CH_3COOH ecetsav	$CH_3CH_2CH_2CH_2CH_2COOH$ kapronsav
CH_3CH_2COOH propionsav	$CH_3(CH_2)_{14}COOH$ palmitinsav
$CH_3CH_2CH_2COOH$ vajsav	$CH_3(CH_2)_{16}COOH$ szterarinsav

B) Nyílt láncú telített dikarbonsavak

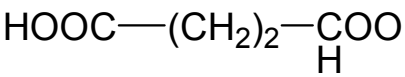
"alkándisav" pl. etándisav, propándisav...



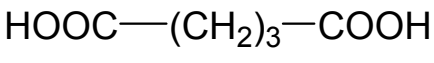
oxálsav



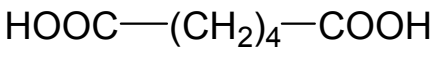
malonsav



borostyánkősav

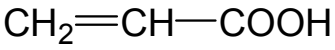


glutársav

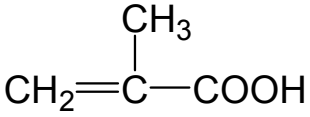


adipinsav

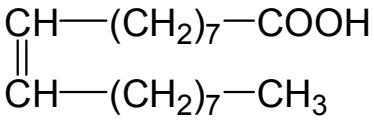
C) Telítetlen karbonsavak



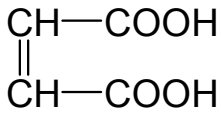
propénsav
akrilsav



2-metilpropénsav
metakrilsav

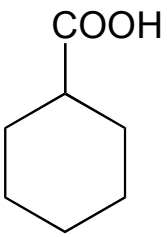


olajsav

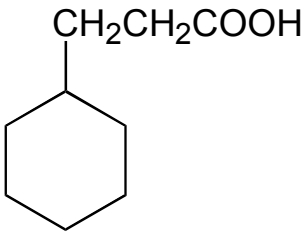


maleinsav

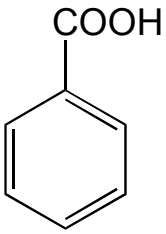
D) Gyűrűs karbonsavak



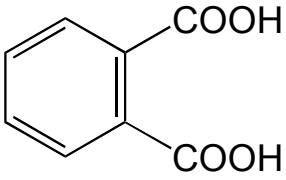
ciklohexánkarbonsav



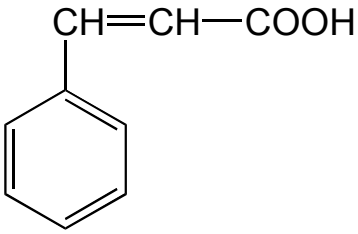
3-ciklohexil-propionsav



benzoesav

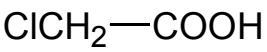


ftálsav

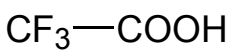


fahéjsav

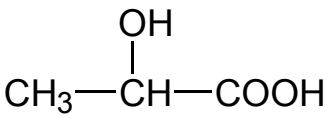
E) Láncban szubsztituált karbonsavak



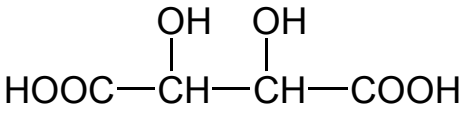
klórecetsav



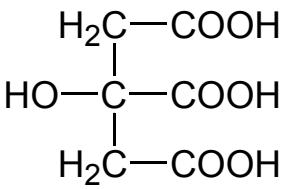
trifluorecetsav



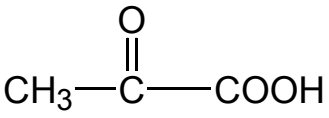
tejsav



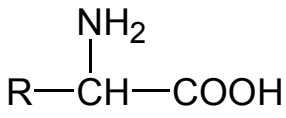
borkősav



citromsav

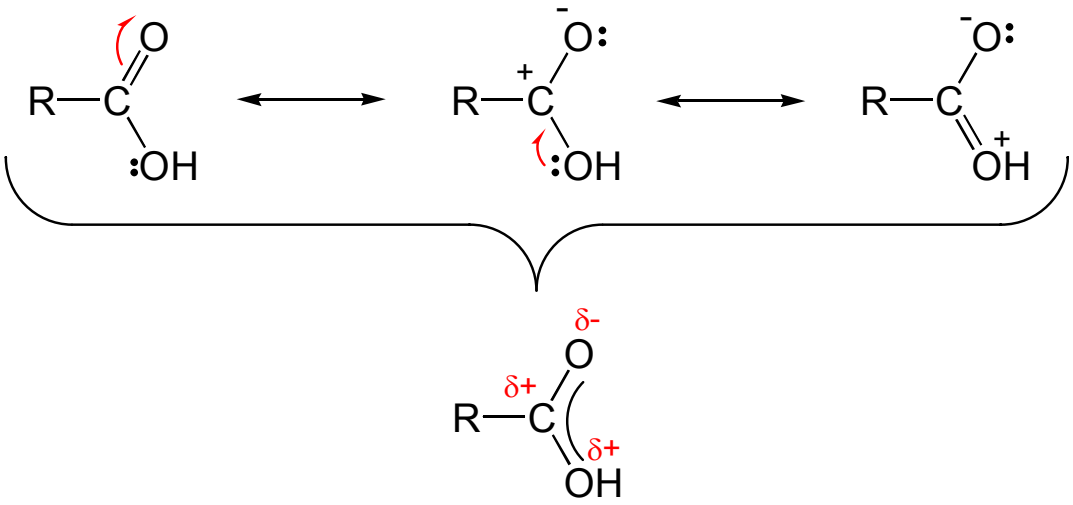


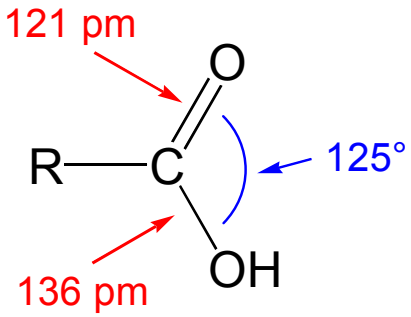
piroszőlősav



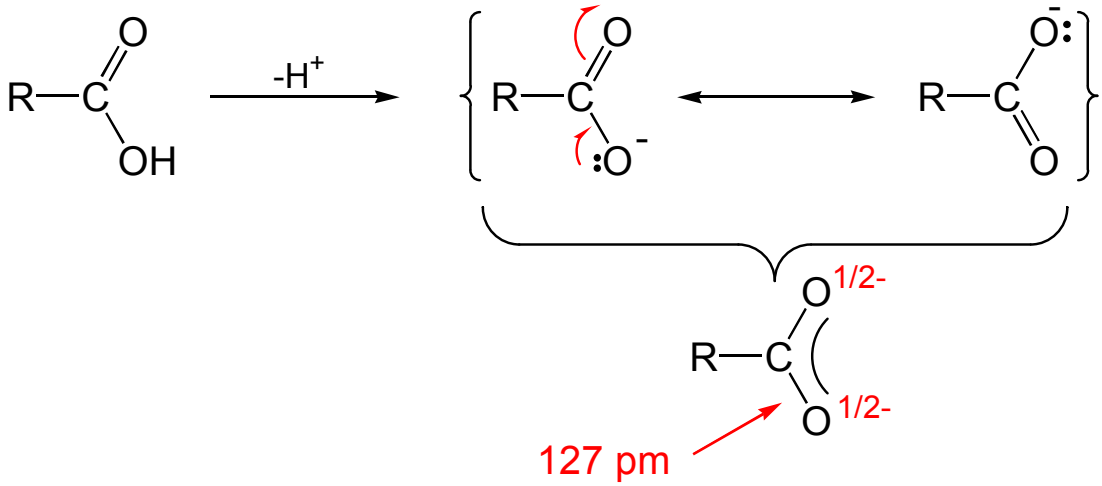
"α-aminosav"

A karbonsavak szerkezete





A karboxilátion szerkezete

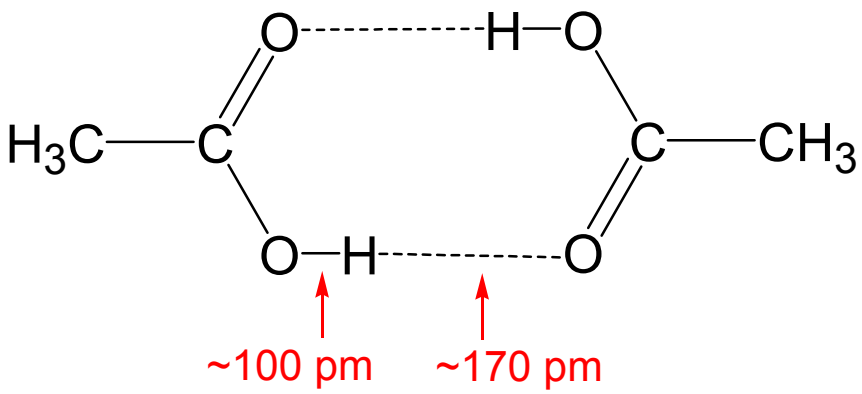


FIZIKAI TULAJDONSÁGOK

Forráspont

$CH_3—O—CH_3$	CH_3CH_2OH	CH_3COOH
-24 °C	78 °C	118 °C

Asszociáció hidrogénkötéssel



molekulatömeg x 2 = 120; fp: 118 °C

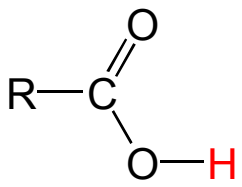
$CH_3(CH_2)_6CH_3$, molekulatömeg: 114, fp: 126 °C

$HOOC—COOH$	$CH_3COO—C_2H_5$
op. = 190 °C	fp. = 54 °C

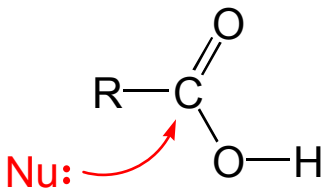
Vízoldhatóság

C_1-C_4: korlátlan; C_9-: oldhatatlan

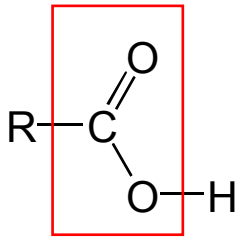
A karbonsavak reaktivitása

1) 

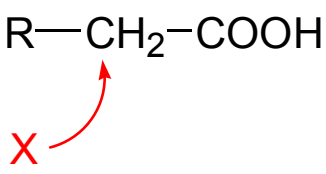
Savi jelleg

2) 

Szubsztitúció karbonil-szénatomon

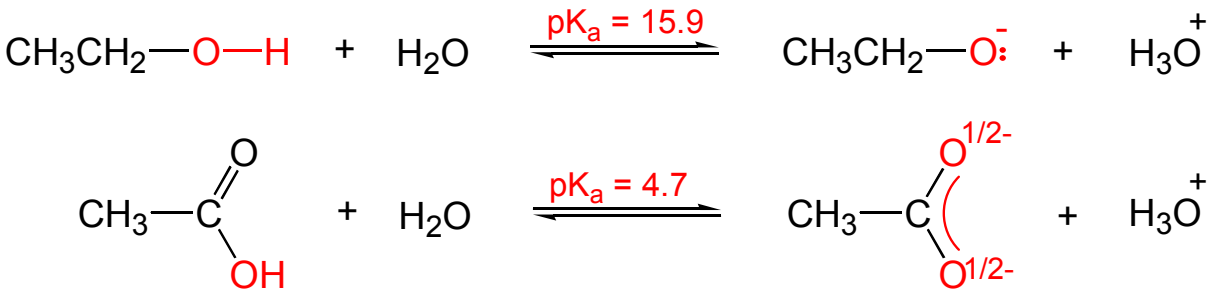
3) 

Dekarboxilezés

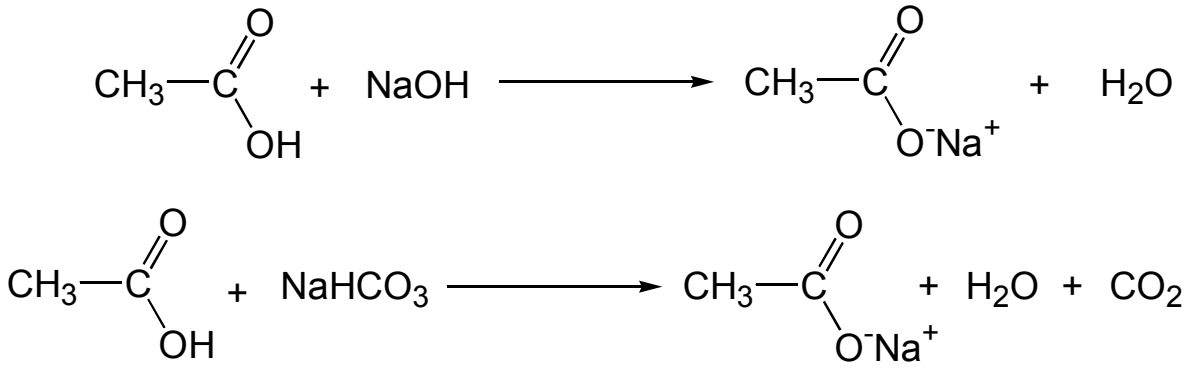
4) 

Szubsztitúció α-szénatomon

A karbonsavak savi jellege



Sóképzés

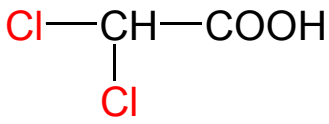
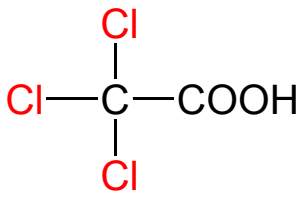


Szubsztituált karbonsavak savi erőssége

-I effektusú R-csoport
növekvő stabilitású anion
erősebb sav

+I effektusú R-csoport
csökkenő stabilitású anion
gyengébb sav

Példák

	pK_a
$CH_3—COOH$	4.76
$Cl—CH_2—COOH$	2.86
	1.48
	0.70

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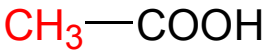
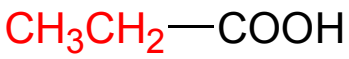
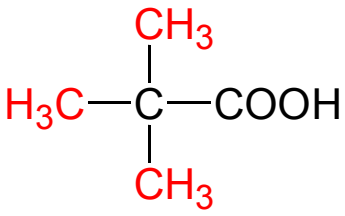
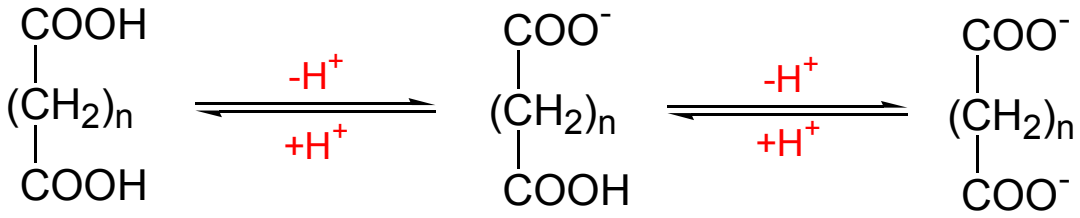
	pK_a
$CH_3CH_2CH_2COOH$	4.82
$CH_2ClCH_2CH_2COOH$	4.50
$CH_3CHClCH_2COOH$	4.05
$CH_3CH_2CHClCOOH$	2.85

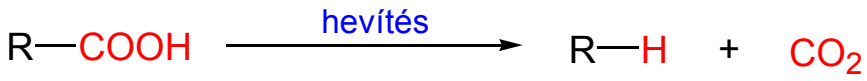
	pK_a
	3.75
	4.76
	4.87
	5.05

A dikarbonsavak savi jellege

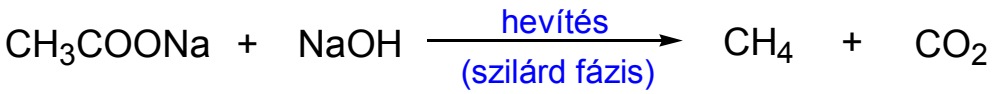


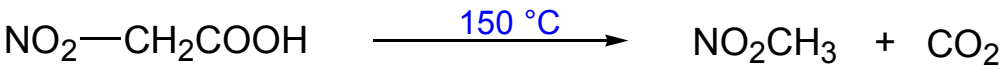
n	pK_1	pK_2
0	1.27	4.28
1	2.85	5.70
2	4.19	5.64

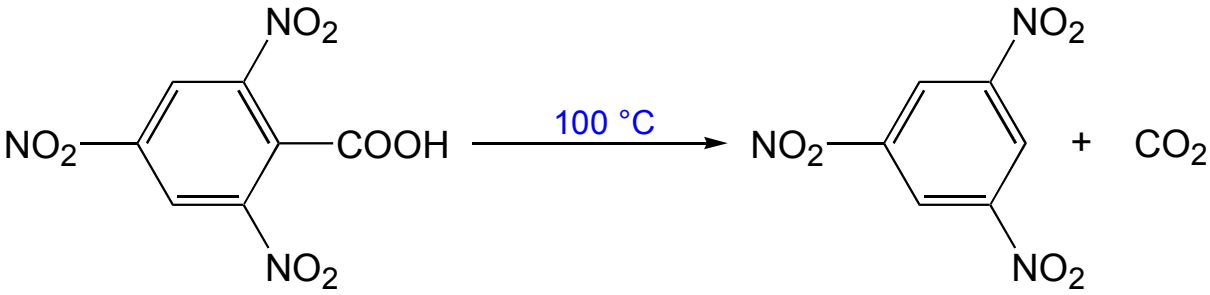
A KARBONSAVAK DEKARBOXILEZÉSE



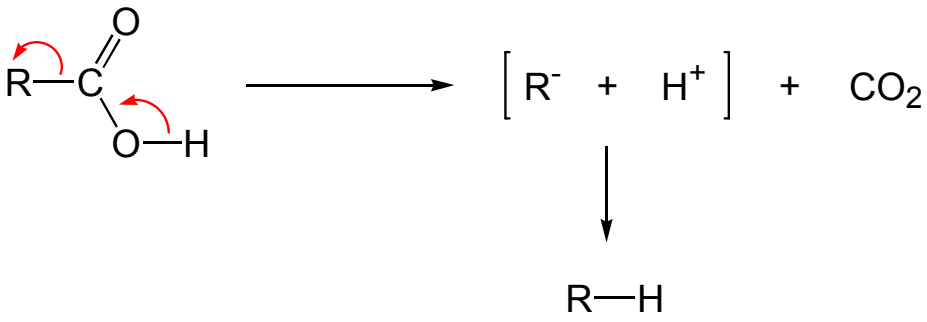
Példák



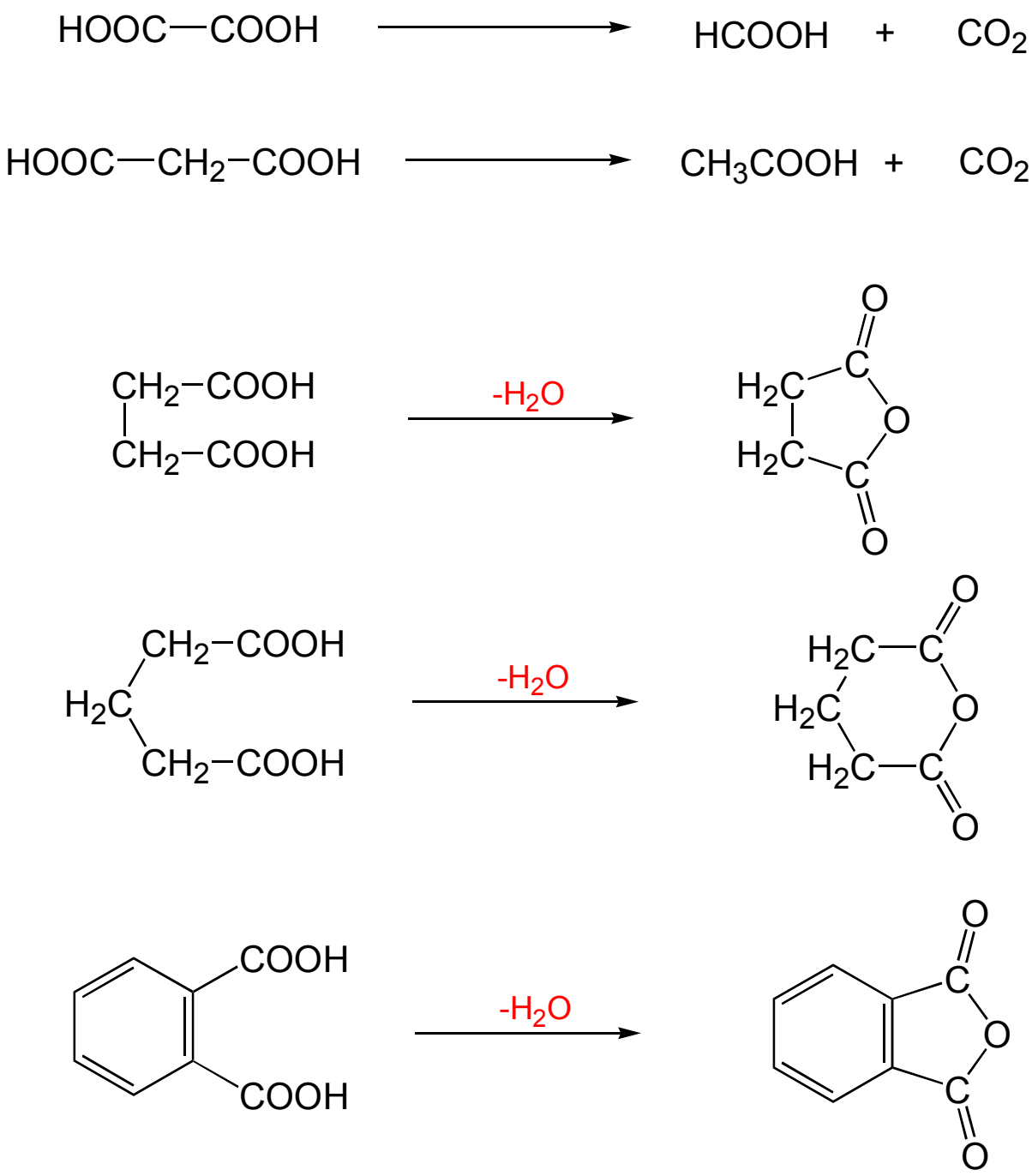




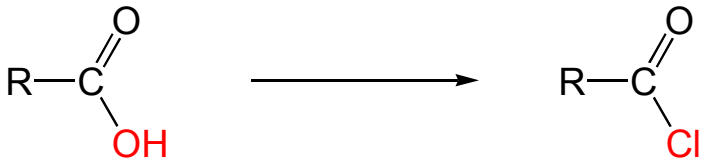
Mechanizmus

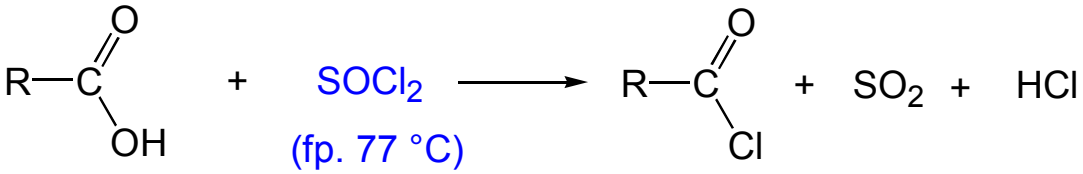


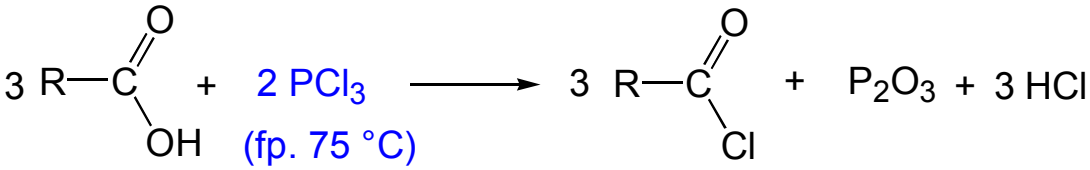
A dikarbonsavak hevítése

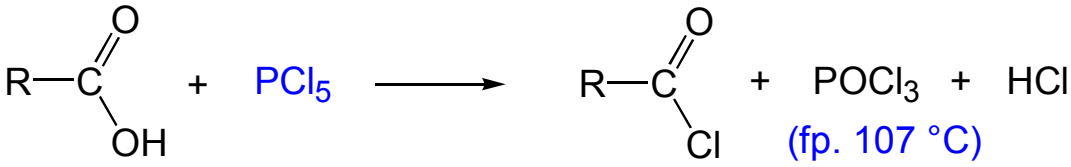


A KARBONSAVAK ÁTALAKÍTÁSA SAVKLORIDOKKÁ

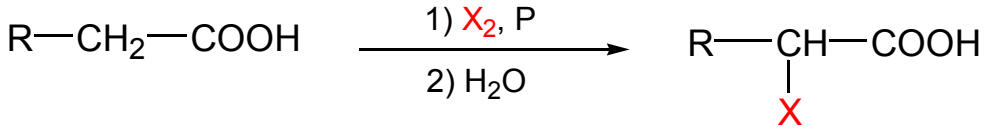


A) 

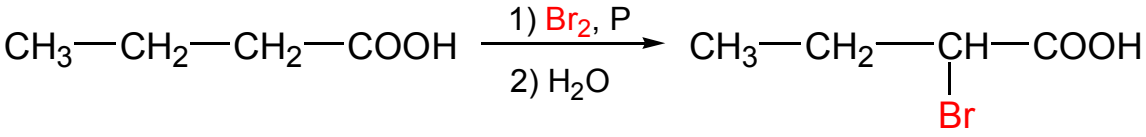
B) 

C) 

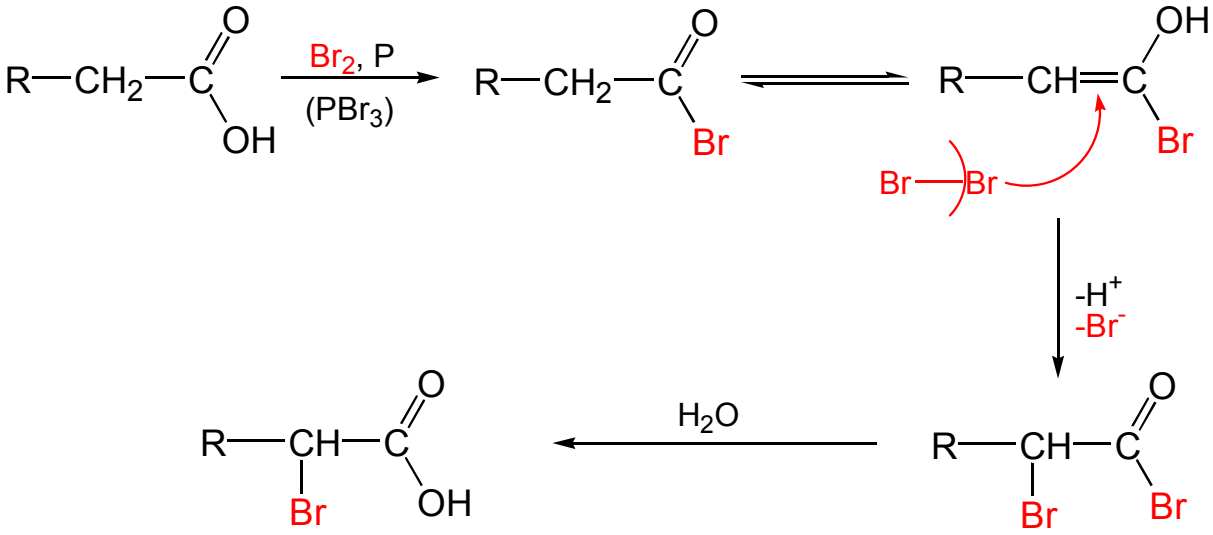
A KARBONSAVAK α-HELYZETŰ HALOGÉNEZÉSE



Példa



Mechanizmus



Az α-halogénezett karbonsavak reakciókészsége