UCG
Univerzitet Crne Gore

Medicinski fakultet
Studijski program Farmacija

Farmaceutska hemija III

- Antiaritmici, Antihipertenzivi, Diuretici-

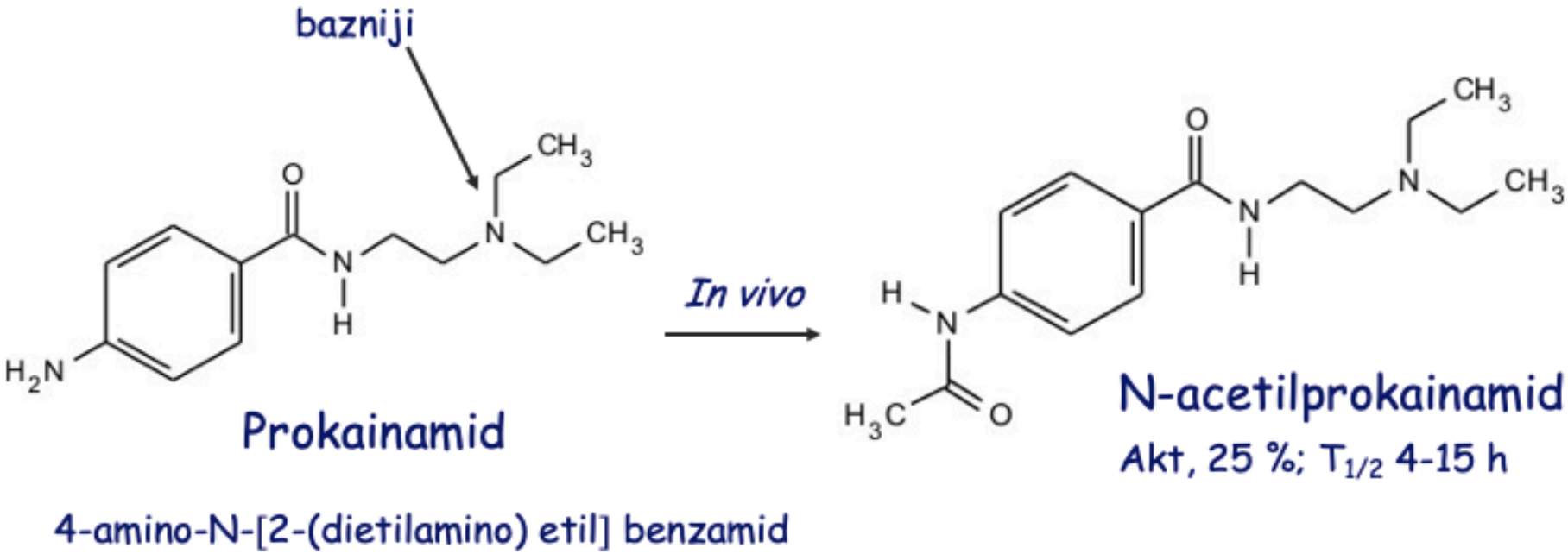
dr pharm. Sehija Dizdarević

Antiaritmici

Prema mehanizmu dejstva:

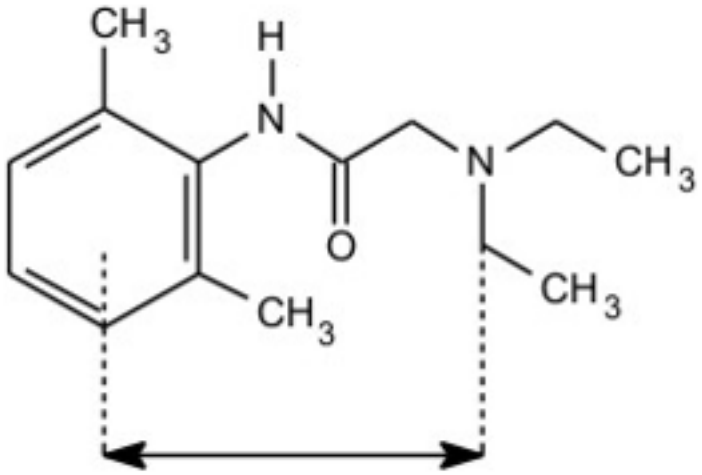
I - Ljekovi stabilizatori membrane ili blokatori Na-kanala
II – Blokatori β-receptora-ololi
III – Blokatori K-kanala
IV – Blokatori Ca-kanala

IA) usporavanje sprovodljivosti i produžavanje repolarizacije



-sintetski-

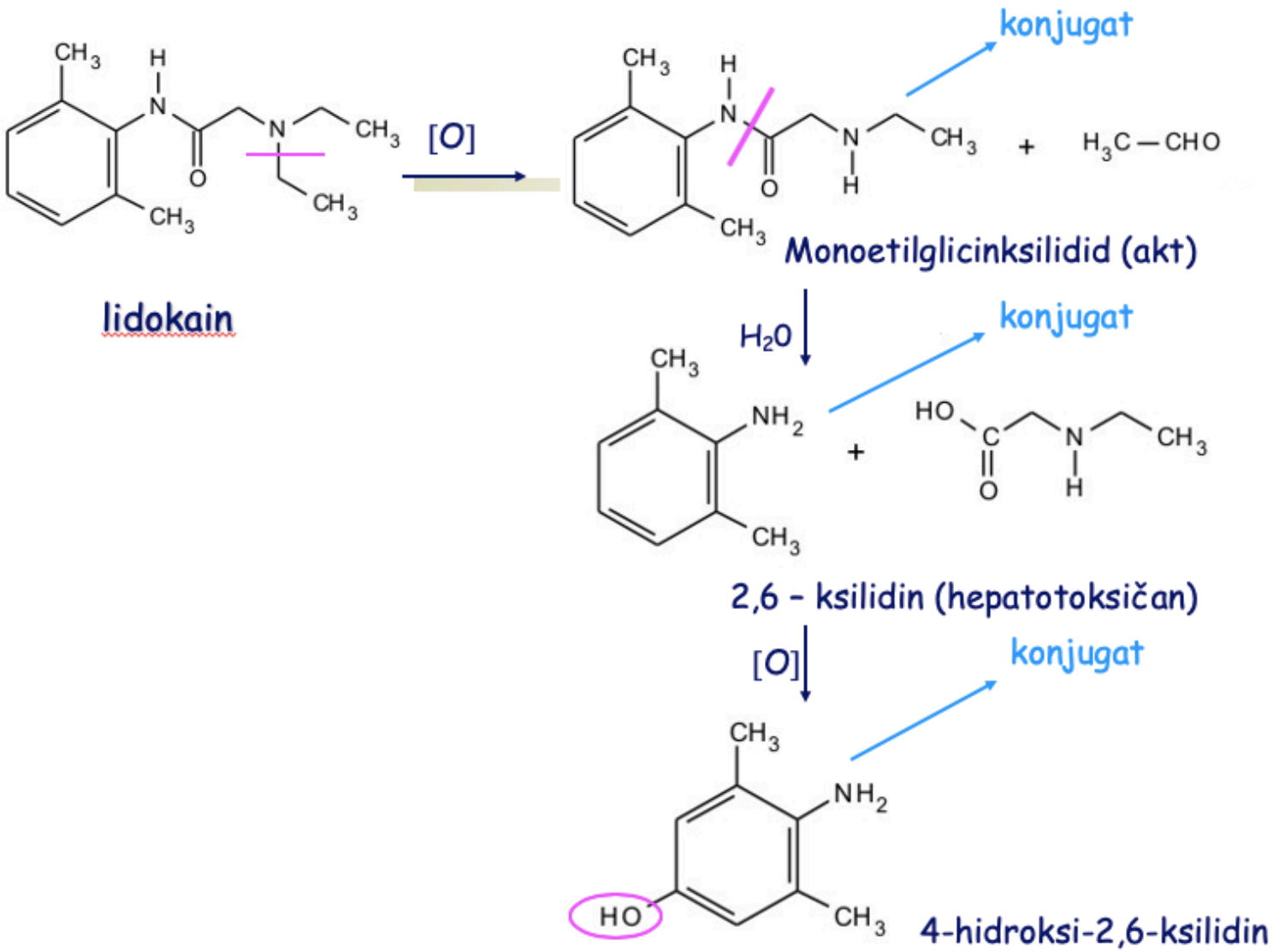
IB) slabo dejstvo na sprovodljivost, skraćivanje procesa repolarizacije (najniži stepen blokade receptora)



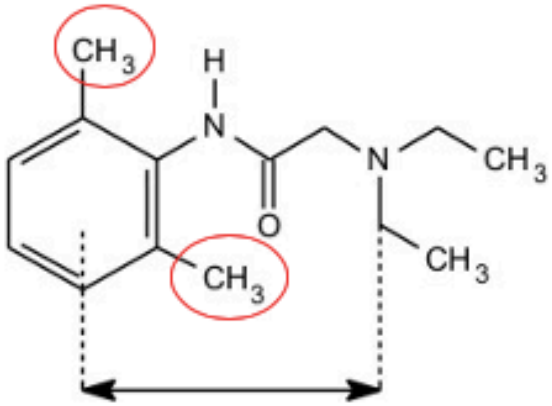
Lidokain

2-(dietilamino)-N-(2,6-dimetilfenil) acetamid

Metabolizam prvog prolaza lidokaina

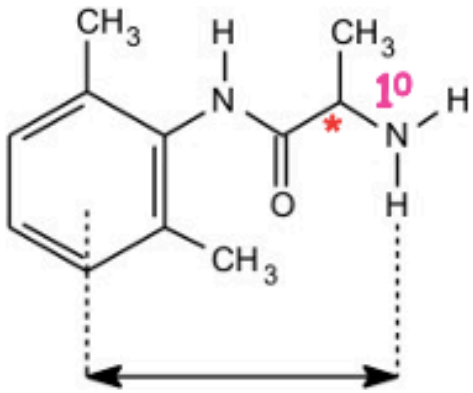


IB) slabo dejstvo na sprovodljivost, skraćivanje procesa repolarizacije



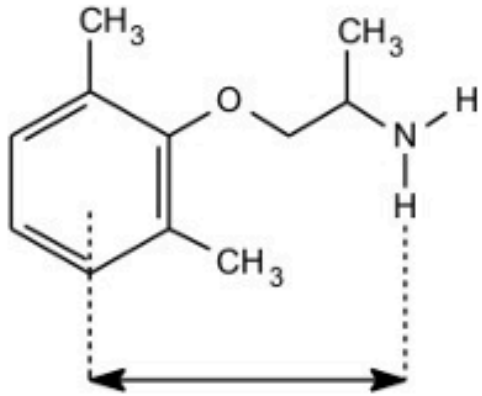
lidokain

2-(dietilamino)-N-(2,6-dimetilfenil)acetamid



tokainid

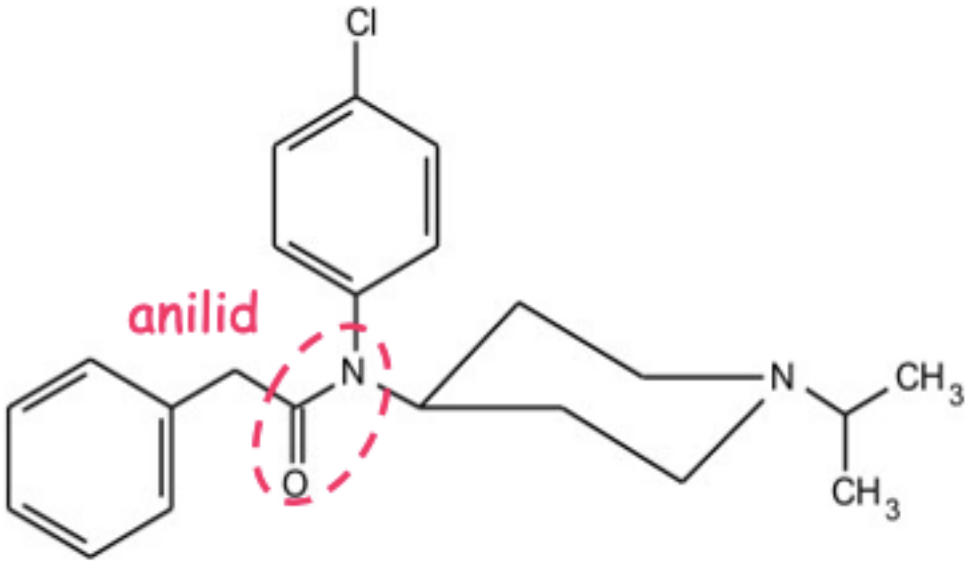
2-amino-N-(2,6-dimetil-fenil)propanamid



meksiletin

1-(2,6-dimetilfenoksi) 2-propanamin

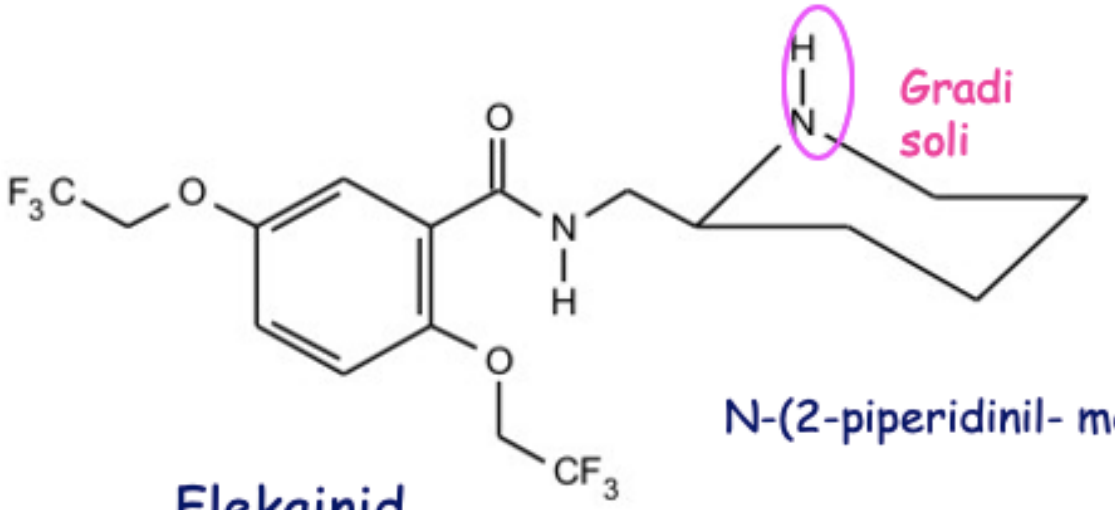
IC) usporavanje sprovodljivosti nadražaja, vrlo slabo dejstvo na repolarizaciju



Lorkainid 1968 g

N-(4-hlorofenil)-N-[1-(1-metiletil)-4-piperidinil] benzenacetamid

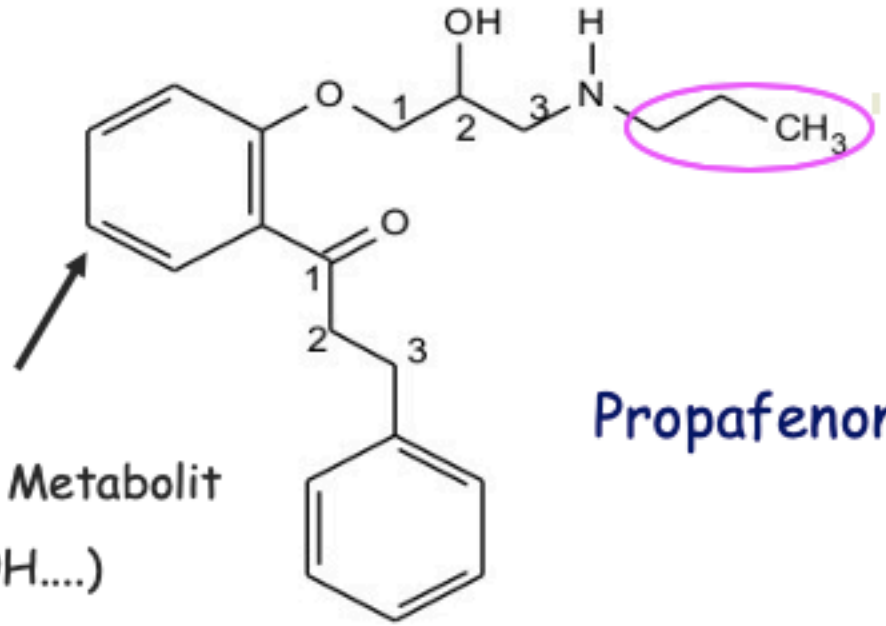
IC) usporavanje sprovodljivosti nadražaja, vrlo slabo dejstvo na repolarizaciju



Flekainid

N-(2-piperidinil- metil)-2.5-bis(2,2,2-trifluoroetoksi) benzamid

IC) usporavanje sprovodljivosti nadražaja, vrlo slabo dejstvo na repolarizaciju



Akt. Metabolit

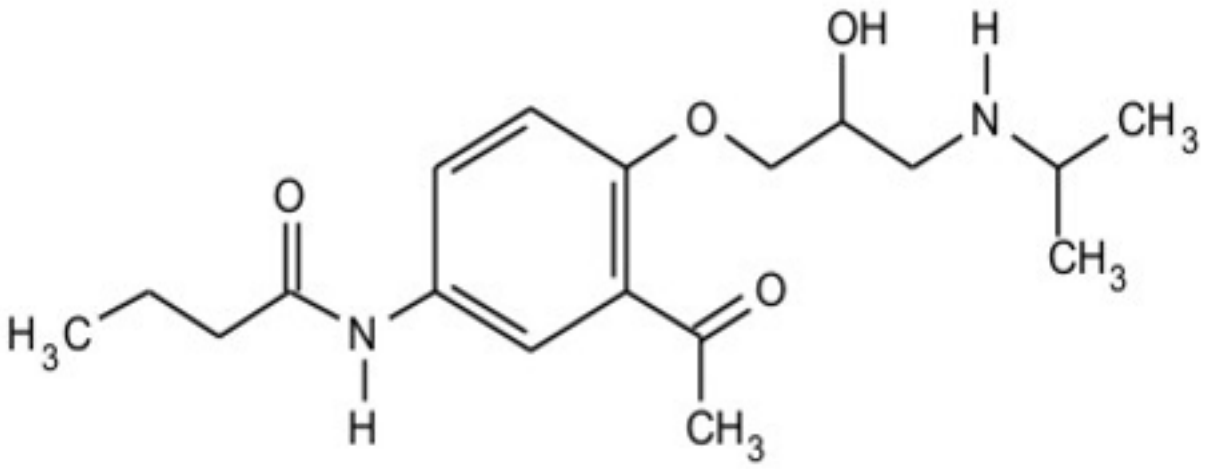
(5-OH....)

Propafenon

1-[2-[2-hidroksi-3-propilamino)-propoksi] fenil]3-fenil-1-propanon

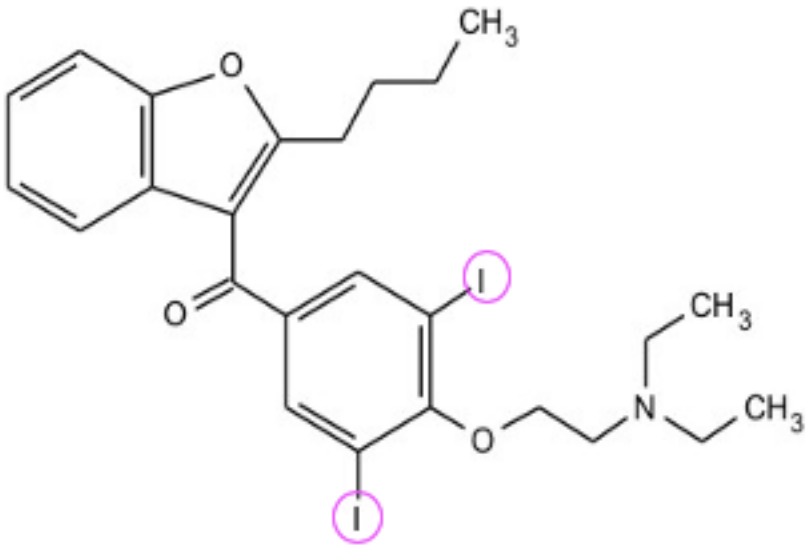
II – Blokatori β-receptora- ololi

- Propranolol
- Atenolol
- Esmolol
- Acebutolol



Acebutolol

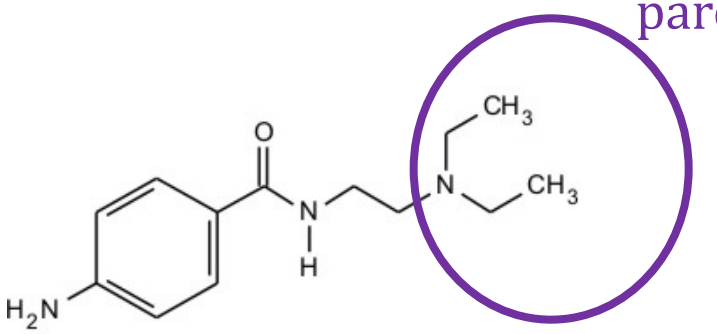
III – ljekovi koji produžavaju akcioni potencijal



Amjodaron

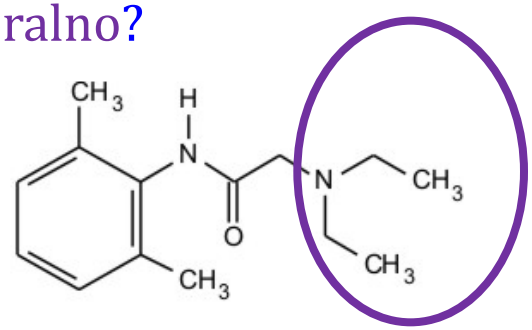
(2-butil-3-benzofuranil) [4-[2- (dietilamino)etoksi] -3,5 dijodfenil] metanon

Koji od navedenih antiaritmika se primjenjuje *per os*, a koji parenteralno?



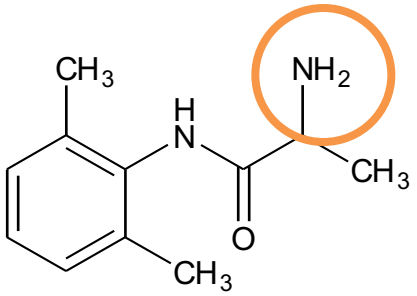
PROKAINAMID

4-amino-N-[2-(dietilamino)etil]benzamid



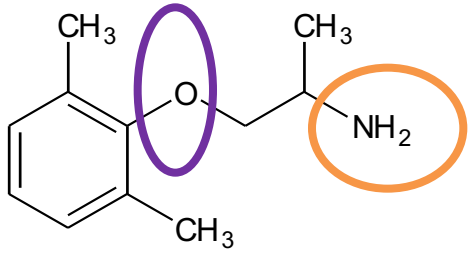
LIDOKAIN

2-(dietilamino)-N-(2,6-dimetilfenil)acetamid



TOKAINID

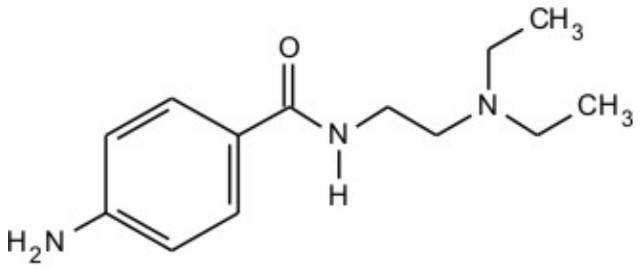
2-amino-N-(2,6-dimetil- fenil) propanamid



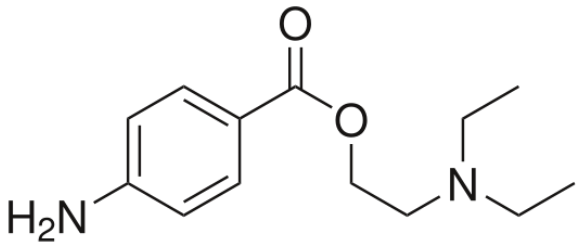
MEKSILETIN

1-(2,6-dimetilfenoksi)2-propanamin

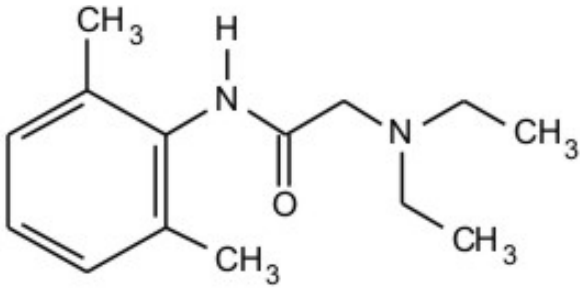
Predložiti metabolizam prokainamida. Koji je metabolit aktivan?



Da li je metabolički stabilniji prokainamid ili prokain?

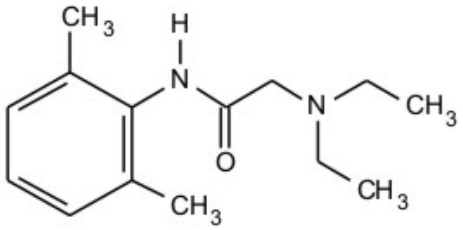


Predložiti metabolizam lidokaina. Koji je metabolit aktivan?



U kom obliku se koristi prokainamid u farmaceutskim preparatima?

Metabolizam lidokaina:

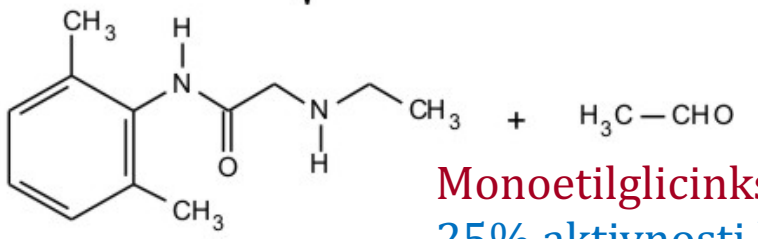


lidokain

[O]

Prvi prolaz kroz jetru

N-dealkilovanje

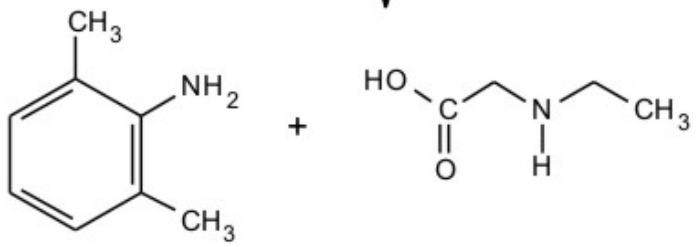


konjugat

Monoetilglicinksilidid –
25% aktivnosti lidokaina

H_2O

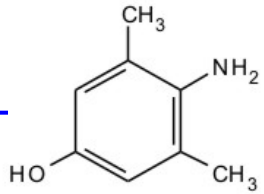
Hidroliza amida



konjugat

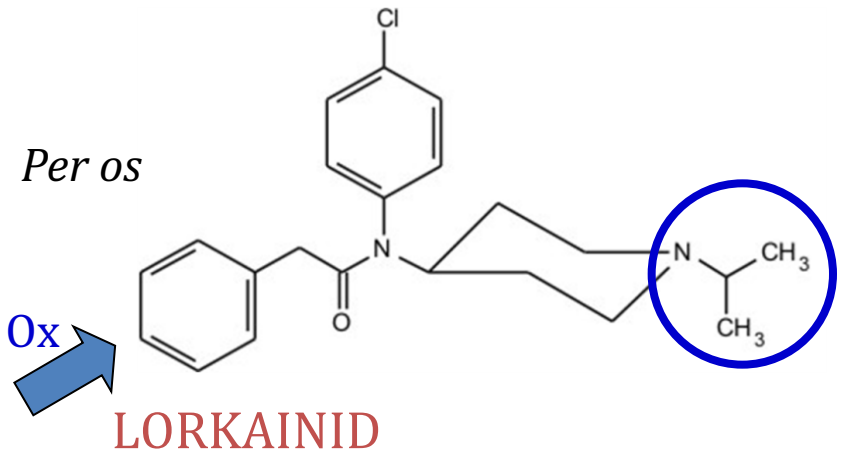
2,6 - ksilidin

[O]



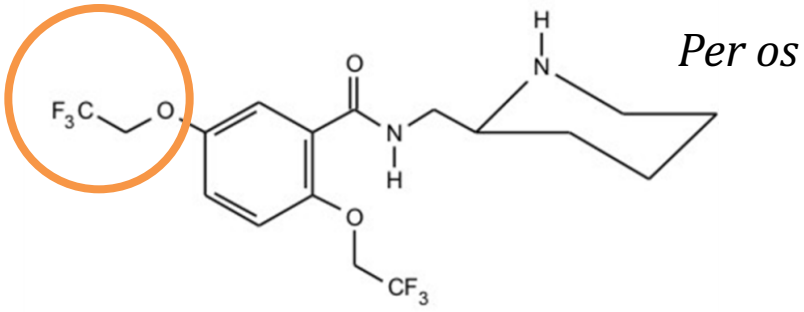
konjugat

4-hidroksi-2,6-ksilidin



LORKAINID

N-(4-hlorofenil)-N-[1-(1-metiletil)
-4-piperidinil] benzenacetamid

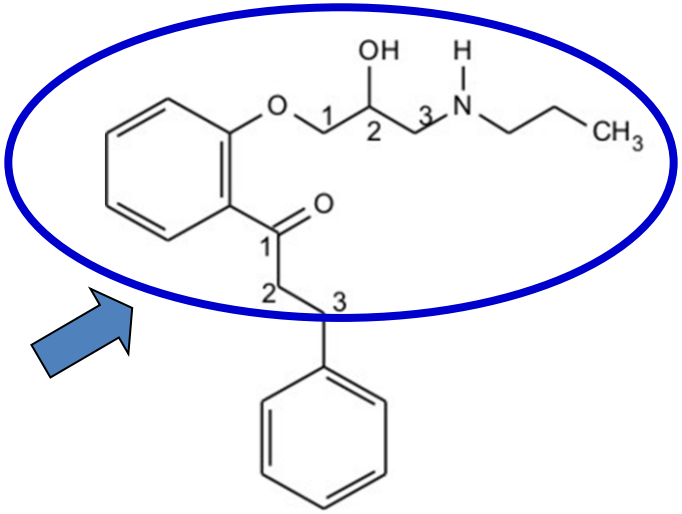


FLEKAINID

N-(2-piperidinil-metil)-2.5-bis
(2,2,2-trifluoroetoksi)benzamid

1. Napisati norlorkainid. Da li je ovaj metabolit lorkainida aktivan?
2. Zbog čega je uveden cikličan amin?
3. Napisati flekainid acetat.
4. Koja trifluoroetoksi grupa će se O-dealkilovati?

Na koju grupu ljekova propafenon podsjeća po strukturi?



PROPAFENON

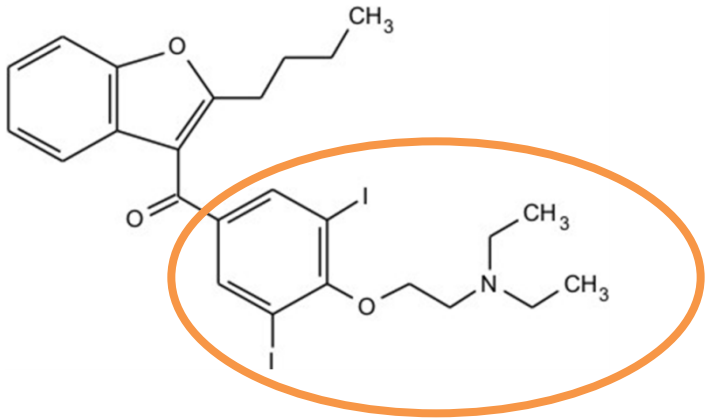
1-{2-[2-hidroksi-3-(propilamino)-propoksi]fenil}
-3-fenil-1-propanon

Koje su metaboličke promjene propafenona?

Koji enantiomer propafenona će ispoljiti efekat β-blokatora?

Kojoj grupi antiaritmika pripada?

Objasniti metabolizam i dugo poluvrijeme eliminacije ($t_{1/2}$=25-30 d.) ovog antiaritmika.



AMJODARON

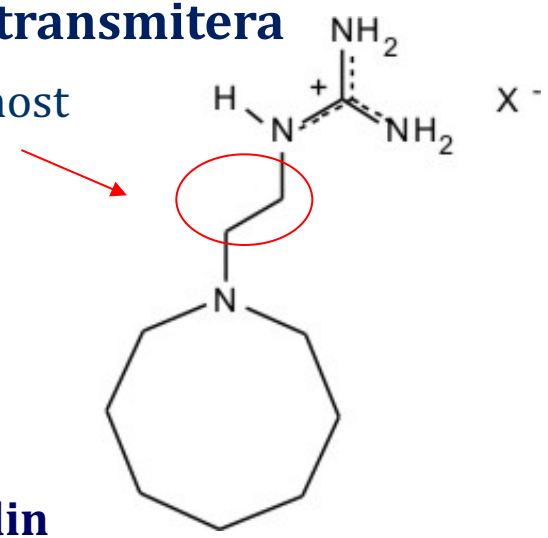
(2-butil-3-benzofuranil) [4-[2-(dietilamino)etoksi]-3,5-dijodfenil]metanon

Koji je njegov najznačajniji neželjeni efekat?

ANTIHIPERTENZIVI

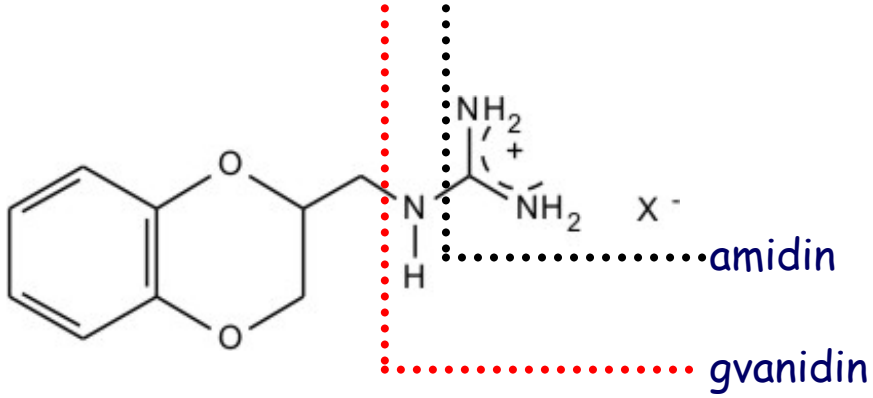
1) blokatori neurona adrenergičkog sistema koji sprečavaju oslobađanje neurotransmitera

↓ pKa vrednost



Gvanetidin

2-[(oktahidro-1-azocinil)etil] gvanidin sulfat



Gvanoksan

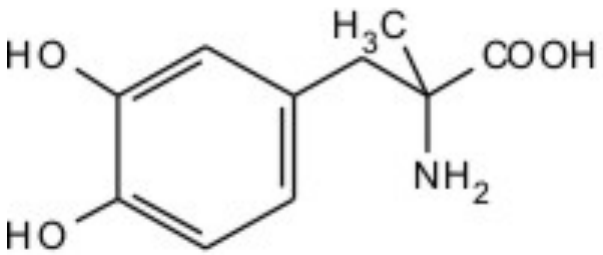
1-(1,4-benzodioksan-2-il-metil)-gvanidin sulfat

2) Dejstvo preko CNS-a (agonisti α2-receptora)

derivati feniletilamina i derivati 2-aminoimidazolina

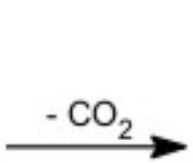
derivati ariletanolamina

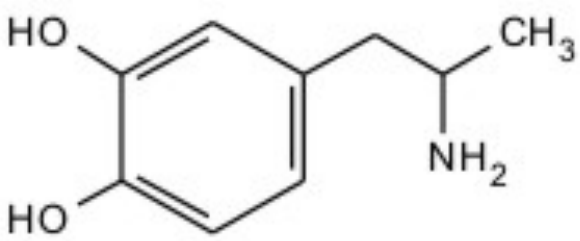
Sterni efekat



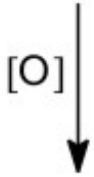
α-metildopa- *pro drug*

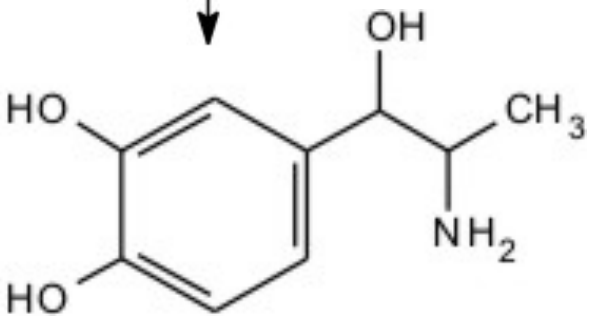
(L)-3-(3.4-dihidroksifenil)-2-metilalanin



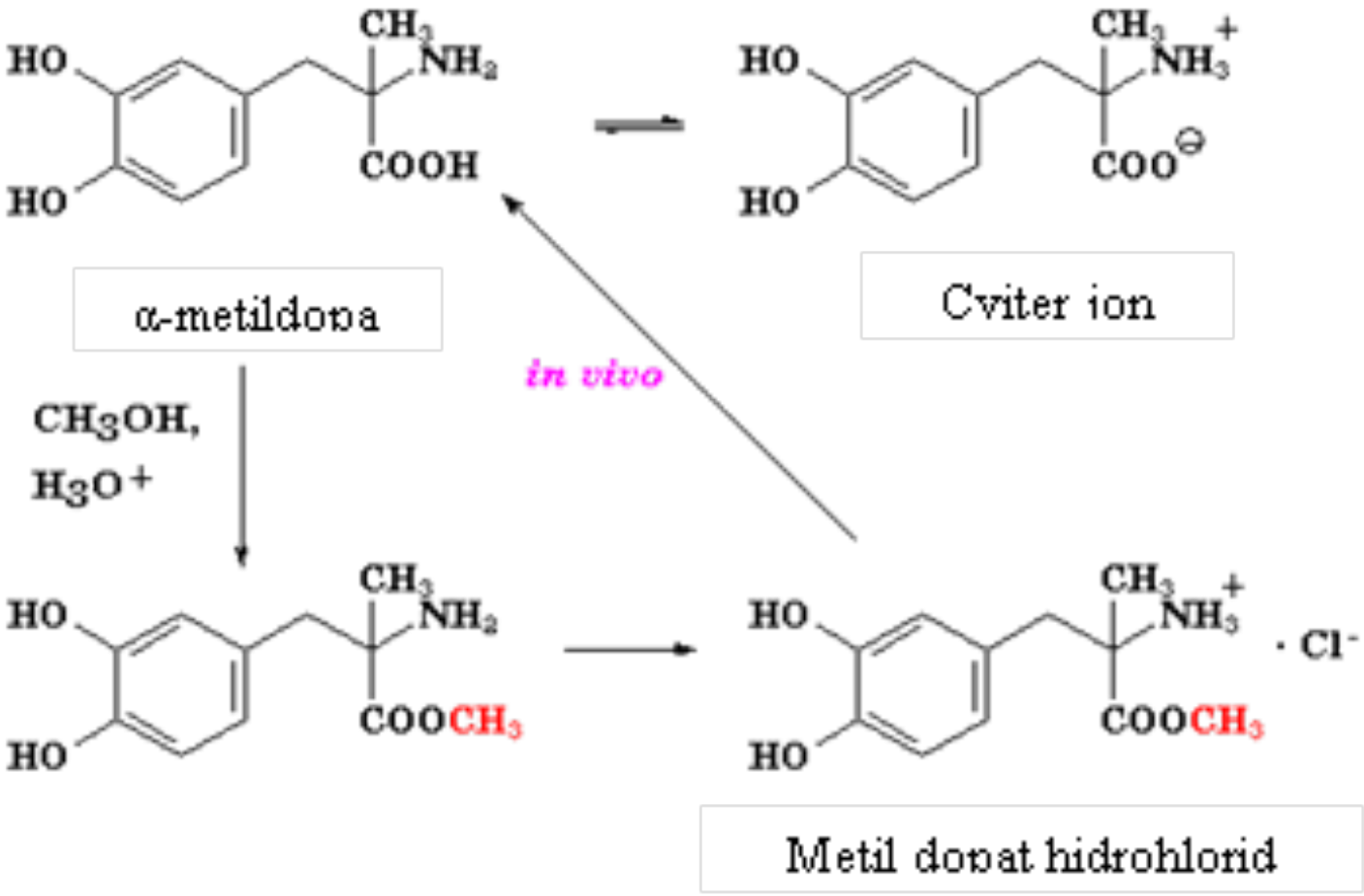


α-metil-dopamin



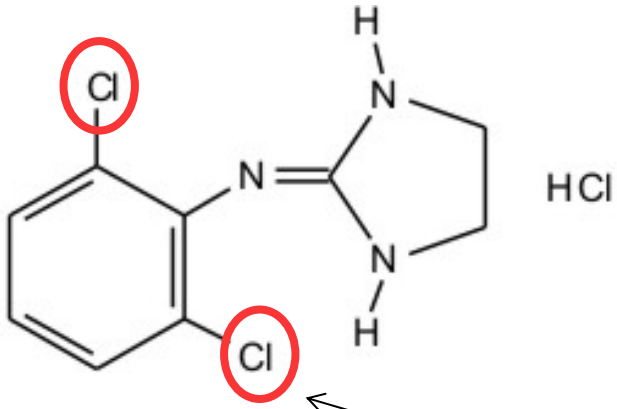


α-metil-noradrenalin
1R,2S


α-metildopa
Cviter ion
in vivo
CH3OH,
H3O+
Metil dopat hidrohlorid

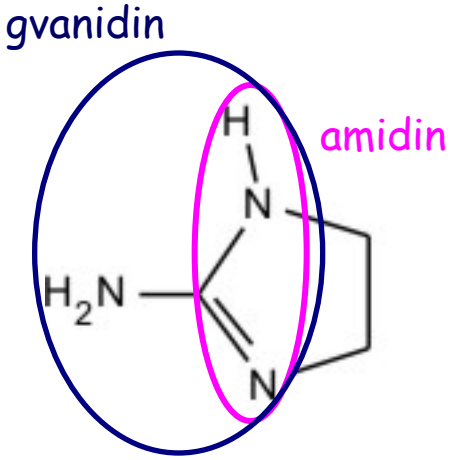
derivati 2-aminoimidazolina

Agonisti α_2 receptora (centralno dejstvo)

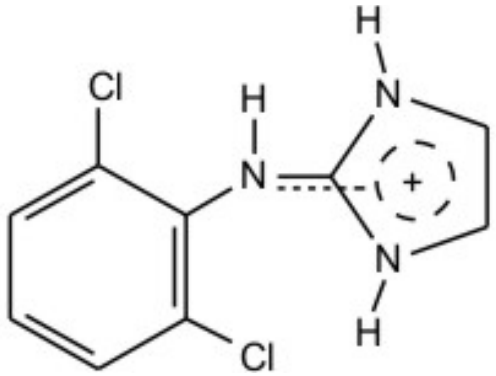


Povećava lipofilnost

Klonidin



2-[(2.6-dihloranilino] imidazolidin hlorid

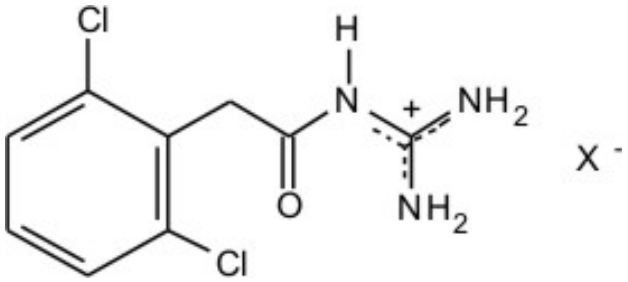


X^-

Protonovani oblik

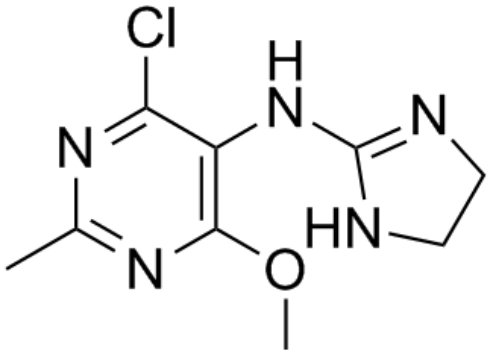
(biološki aktivan)

Rezonantna stabilizacije gvanidino grupe smanjuje pKa vrednost

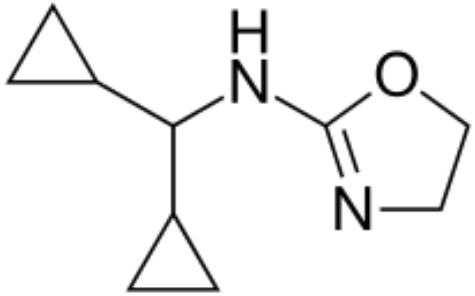


N-amidino-2-(2,6-dihlorfenil) acetamid

Gvanfacin



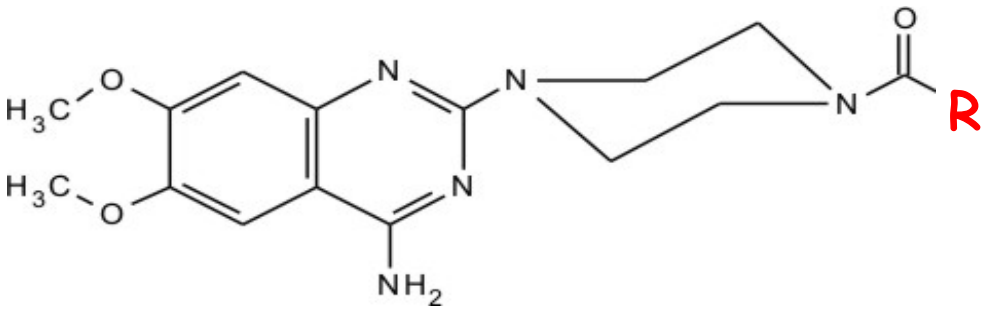
Moxonidin

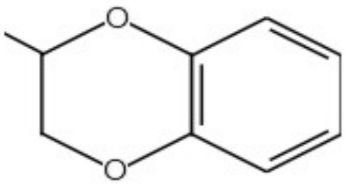


Rilmenidin

metabolički stabilan

3) blokatori alfa 1 adrenergičkih receptora

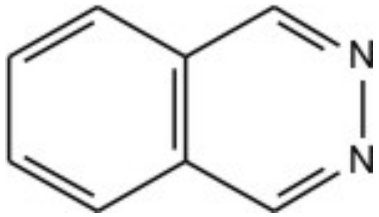


R GRUPA	NAZIV LEKA
	PRAZOSIN HIDROHLORID 1-(4-amino-6,7-dimetoksi-2- hinazolinil)-4-2-(furanilkarbonil) piperazin
	TERAZOSIN HIDROHLORID 1-(4-amino-6,7-dimetoksi-2-hinazolinil)-4-[(tetrahidro-2-furanil) karbonil] piperazin
	DOKSAZOSIN HIDROHLORID 1-(4-amino-6,7-dimetoksi-2-hinazolinil)-4 [(2,3-dihidro-1,4-benzodioksan-2-il) karbonil] piperazin

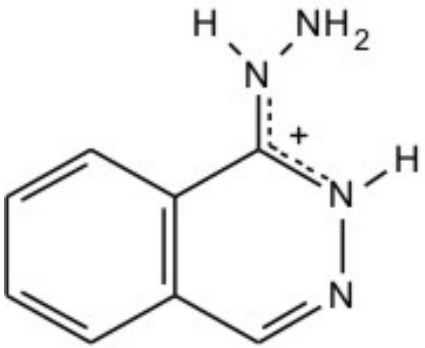
5) vazodilatacija **arterija** u glatkim mišićima

derivati ftalazina, benzotiadiazina, piperidino-pirimidina

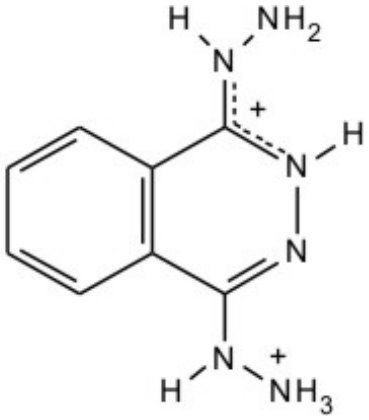
- derivati ftalazina -



benzo[d]piridazin = ftalazin

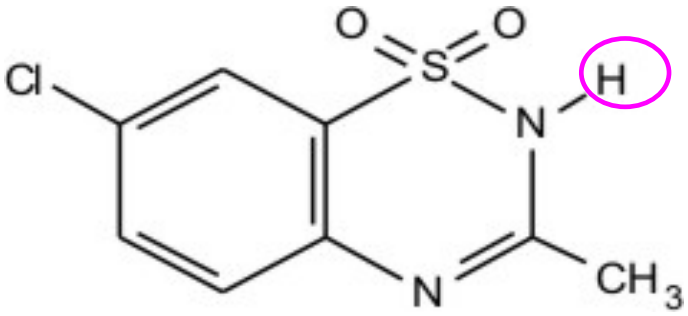


Hidralazin

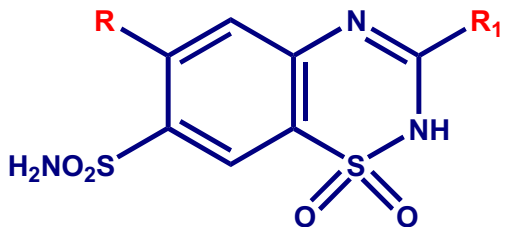


Dihidralazin

-derivati benzotiadiazina-



Kiseo sulfonamidski N



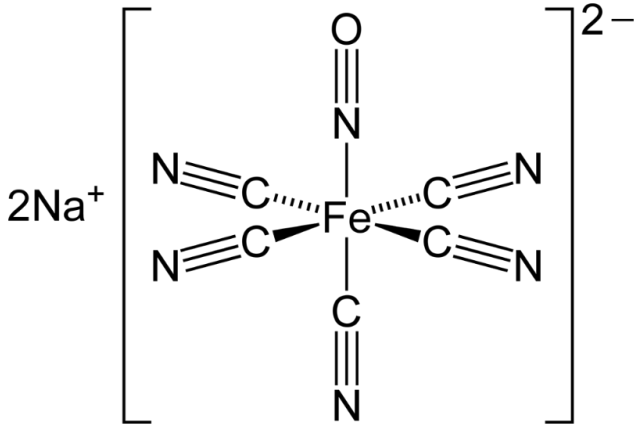
Diazoksid

diuretik

7-hlor-3-metil-2H-1,2,4-benzotiadiazin-1,1-dioksid

6) vazodilatacija **arterija i vena**

$Na_2[Fe(CN)_5NO]$-



Natrijum-nitroprusid = dinatrijum-pentacijanonitrozilferat (II)

7. Blokatori kalcijumskih kanala

- Ca^{2+} – biohemijski regulator sinaptičkih transmisija i mišićnih kontrakcija

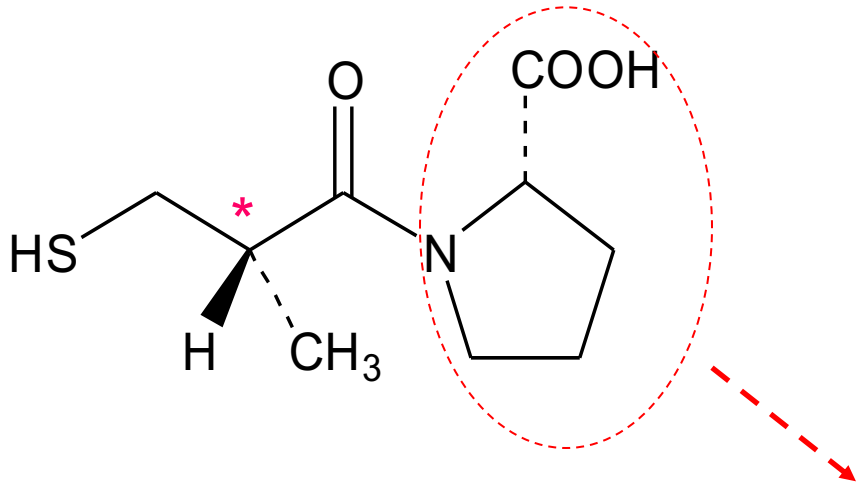
- Blokatori Ca-kanala smanjuju koncentraciju slobodnog Ca^{2+} u citozolu ćelije regulisanjem transporta jona kroz kanale

- Djeluju na kanale koji su u otvorenom (kratkotrajna depolarizacija) ili inaktivisanom stanju (stanje neosetljivosti na dalju depolarizaciju)

8) ACE – inhibitori

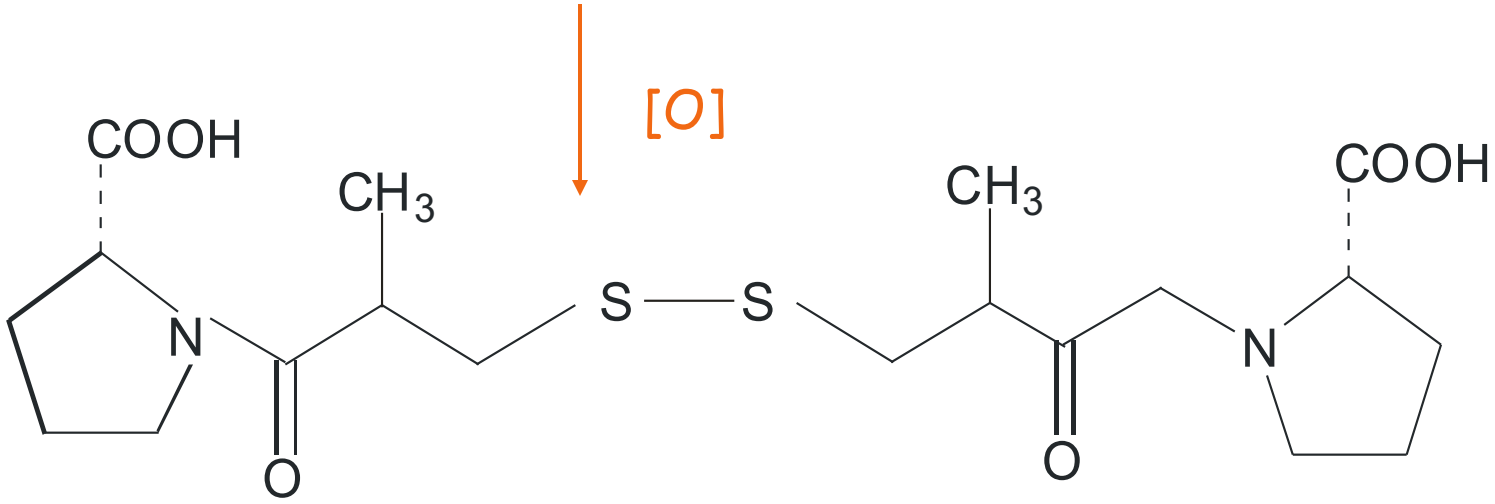
"prili"

1) Inhibitori koji sadrže sulfhidrilnu grupu



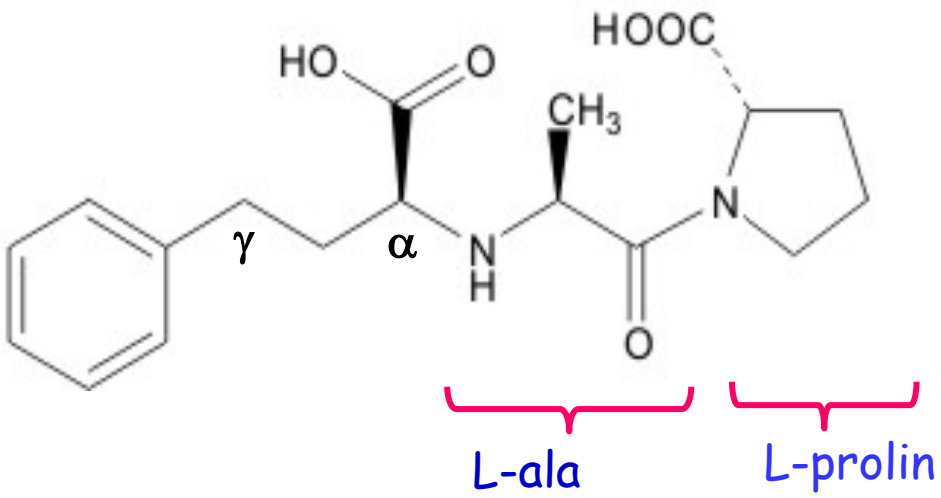
Phe-Ala-Pro

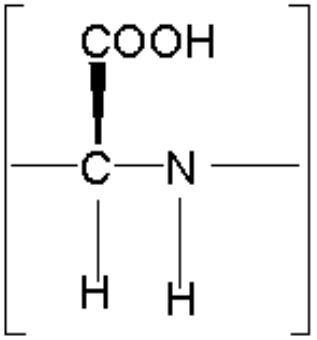
(S)-1-(3-merkapto-2-metil-1-oksopropil)-L-prolin



Dimer – inaktivan metabolit

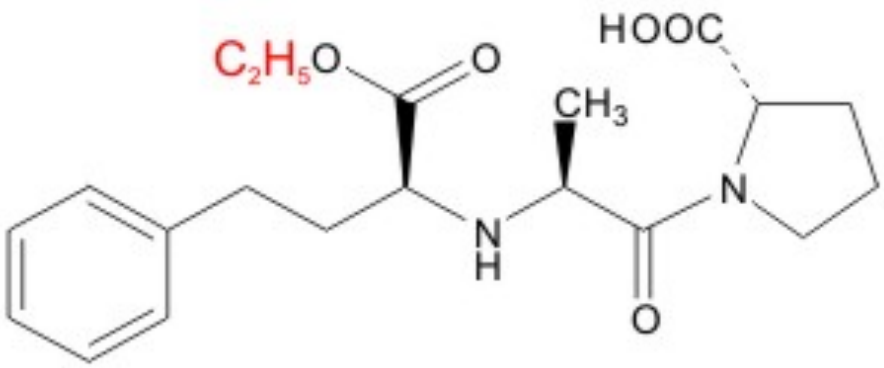
2) Dikarboksilati (uklonjena SH grupa)

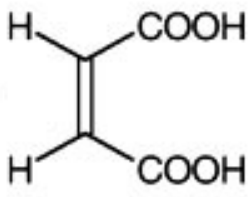




2-amino-4-fenil buterna kiselina

Enalaprilat – aktivni oblik, iv (jedini); Nije aktivan per os !

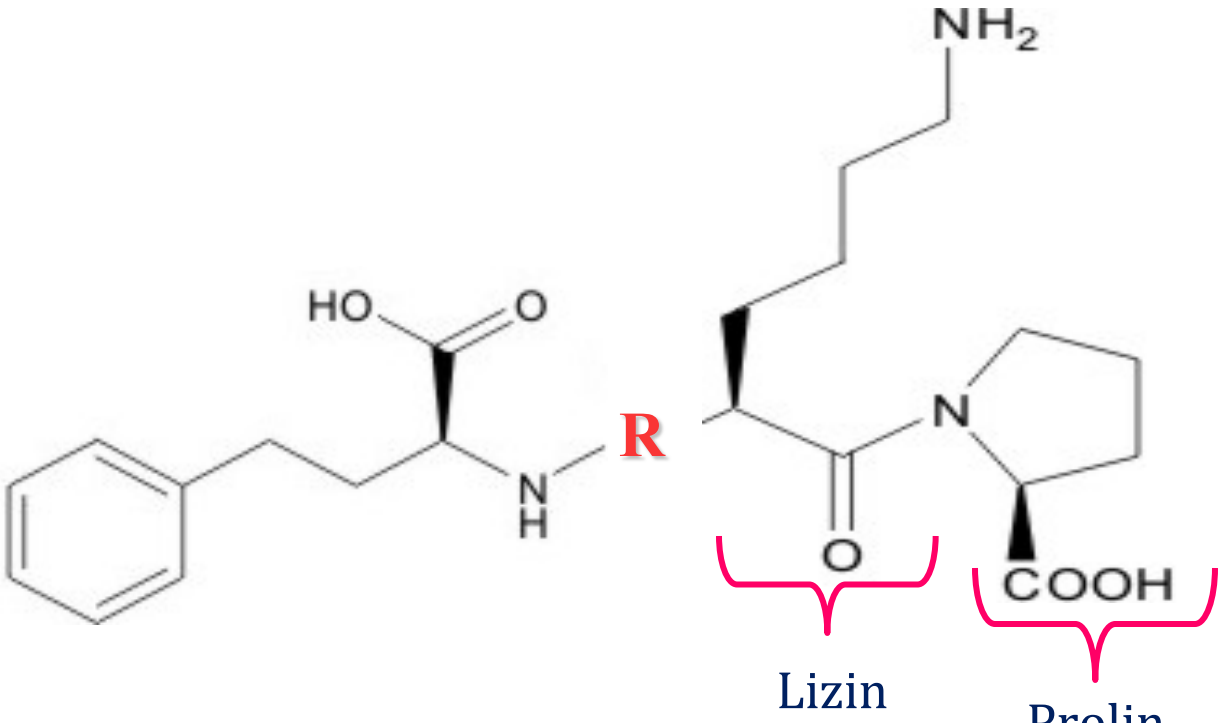




maleat

Enalapril – *pro drug*

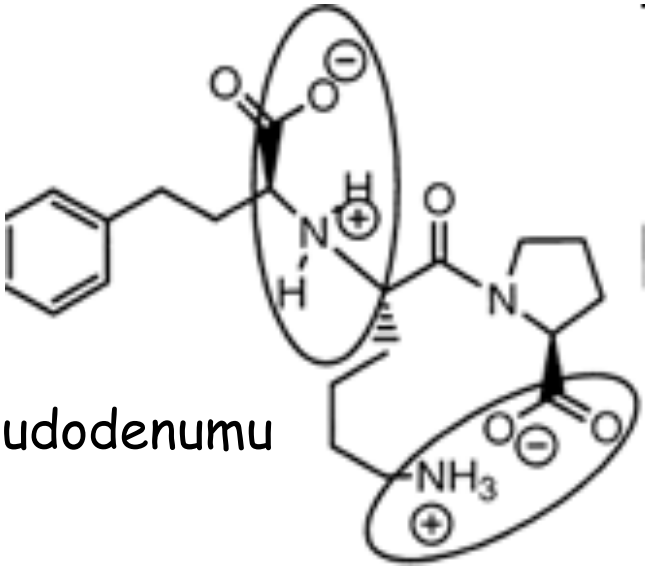
(2*S*)-1-[(2*S*)-2-{[(2*S*)-1-etoksi-1-okso-4-fenilbutan-2-il]amino}propanoil]pirolidin-2-karboksilna kis



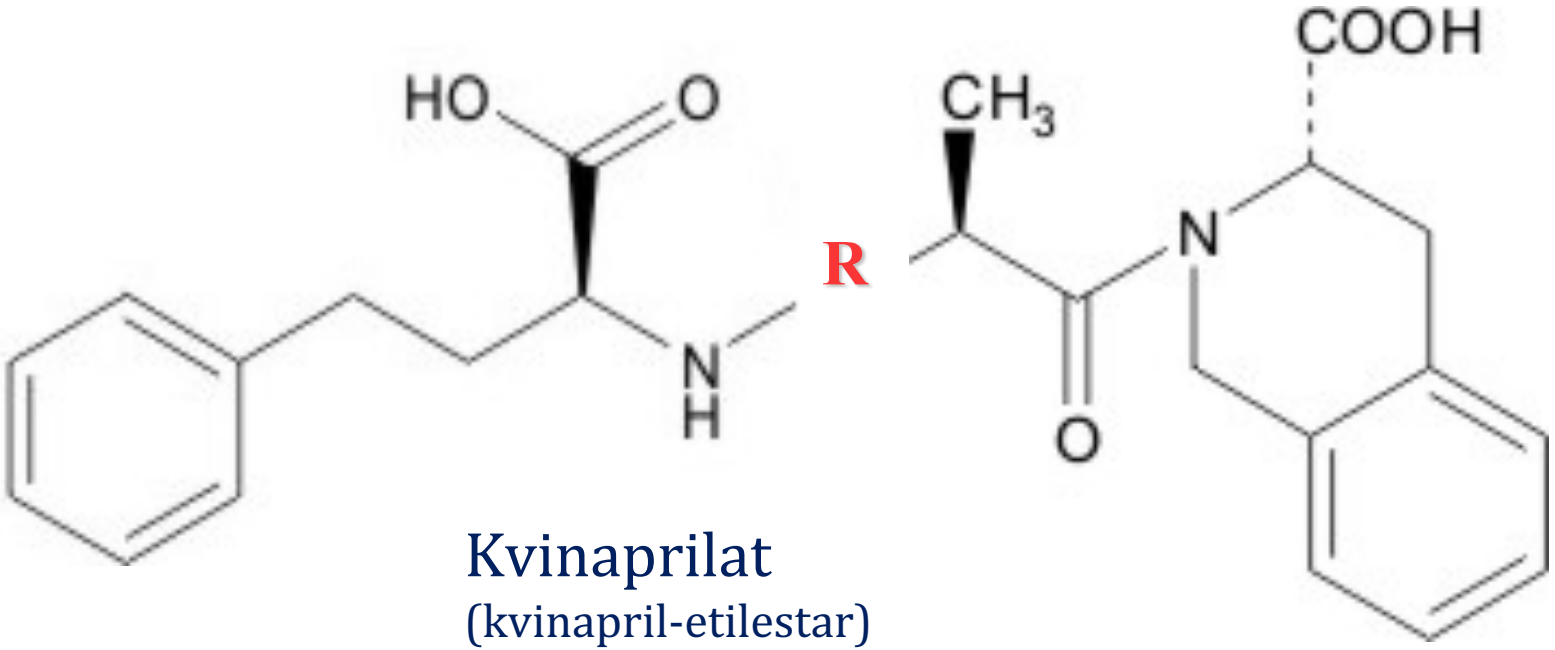
Lizinopril

(lizin derivat enalaprilata)

*N*2-[(1*S*)-1-karboksi-3-fenilpropil]-L-lizil-L-prolin

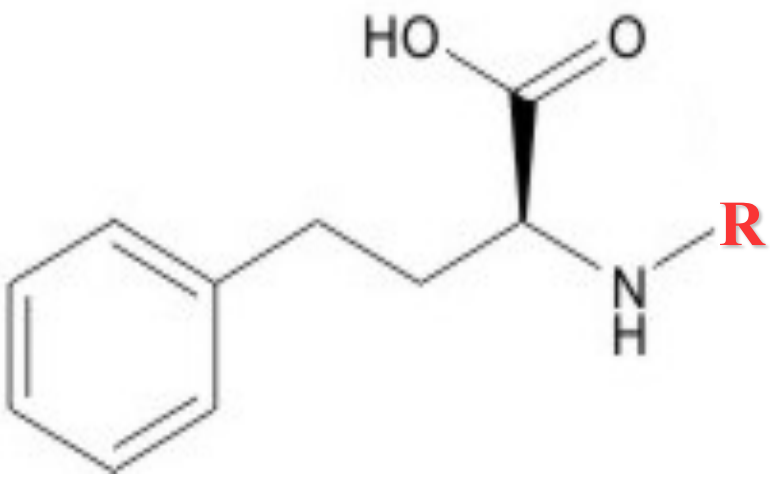


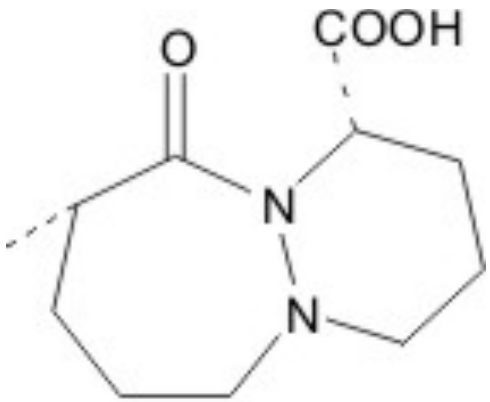
U dudodenumu



Kvinaprilat
(kvinapril-etilestar)

(3*S*)-2-[(2*S*)-2-{[(2*S*)-1-etoksi-1-okso-4-fenilbutan-2-il]amino} propanoil] -1,2,3,4-tetrahidro*izohinolin-3-karboksilna kis.*



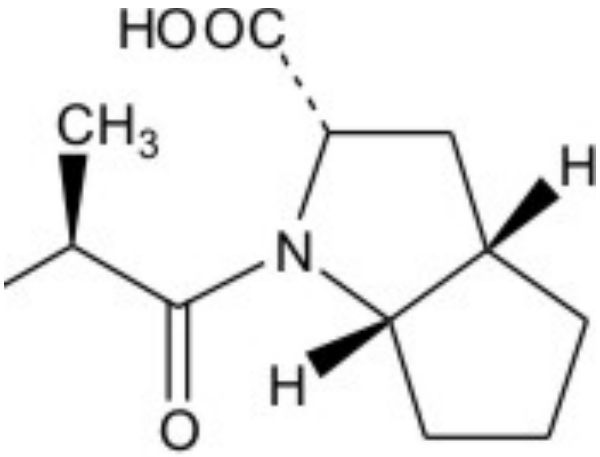


Ala

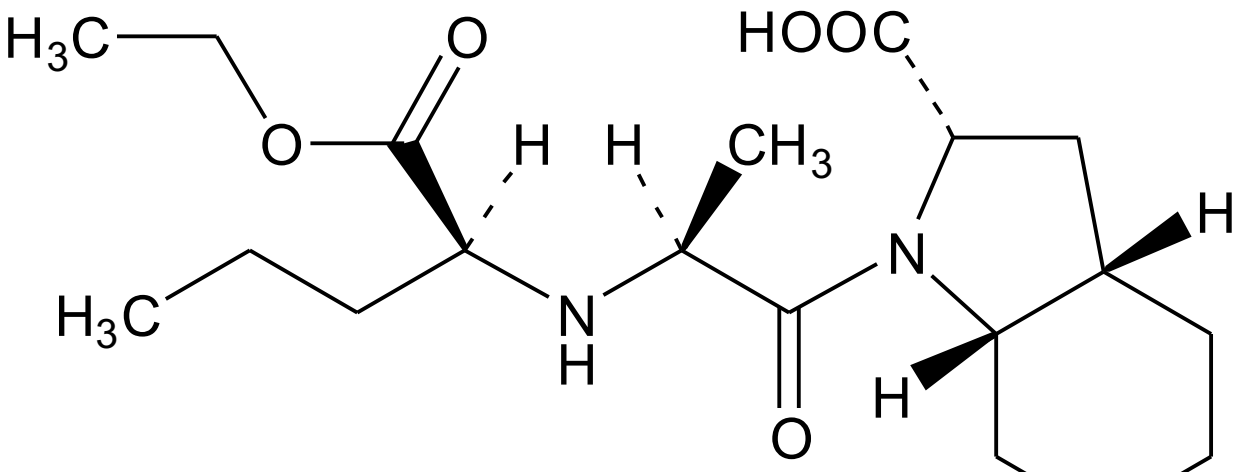
Cilazaprilat

oktahidro-1*H*-piridazino[1,2-*a*][1,2]diazepin-1-karboksilna kis

Ala, Pro



Ramiprilat

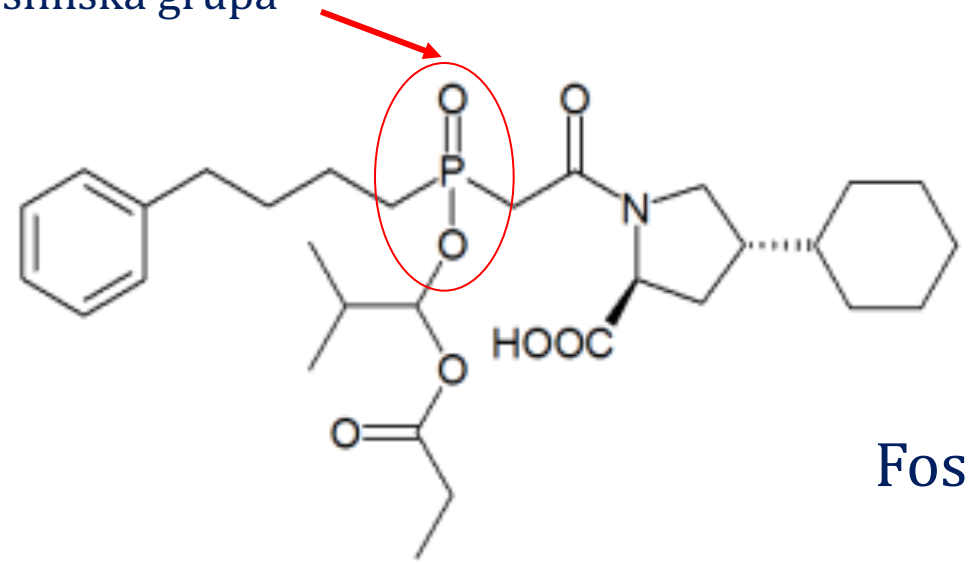


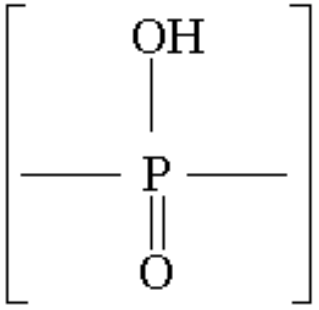
Perindopril

Nema fenil grupe, etil estar alfa-amino pentanske kis.

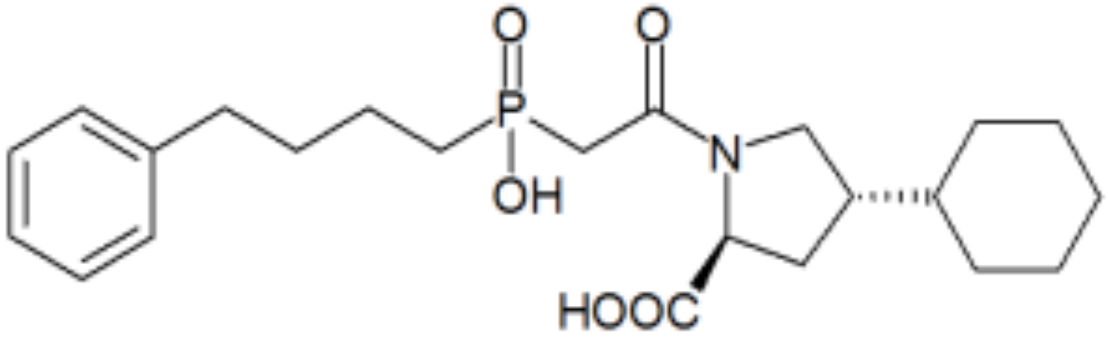
3) Inhibitori koji sadrže fosfonatnu grupu

fosfinska grupa





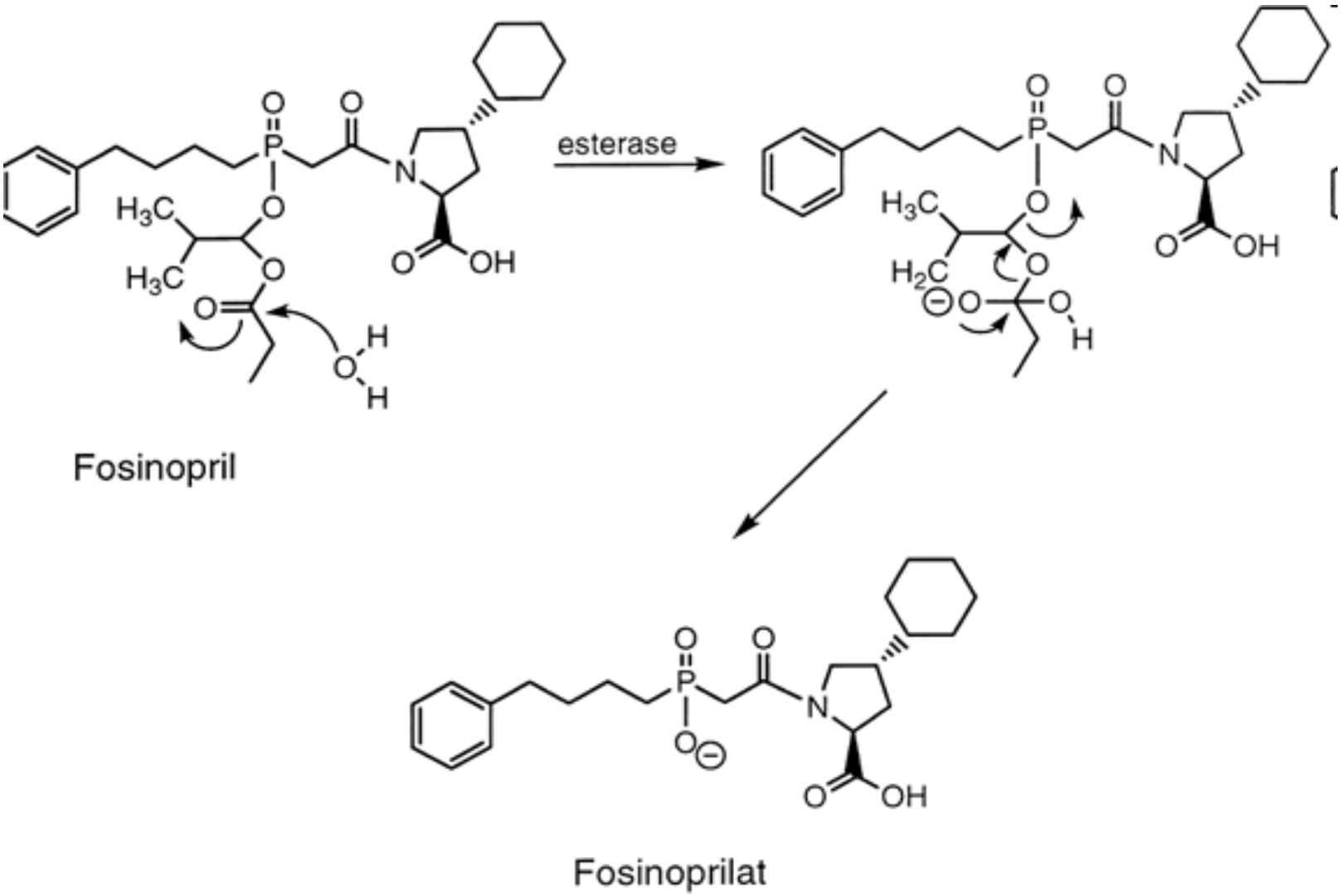
Fosinopril, pro drug



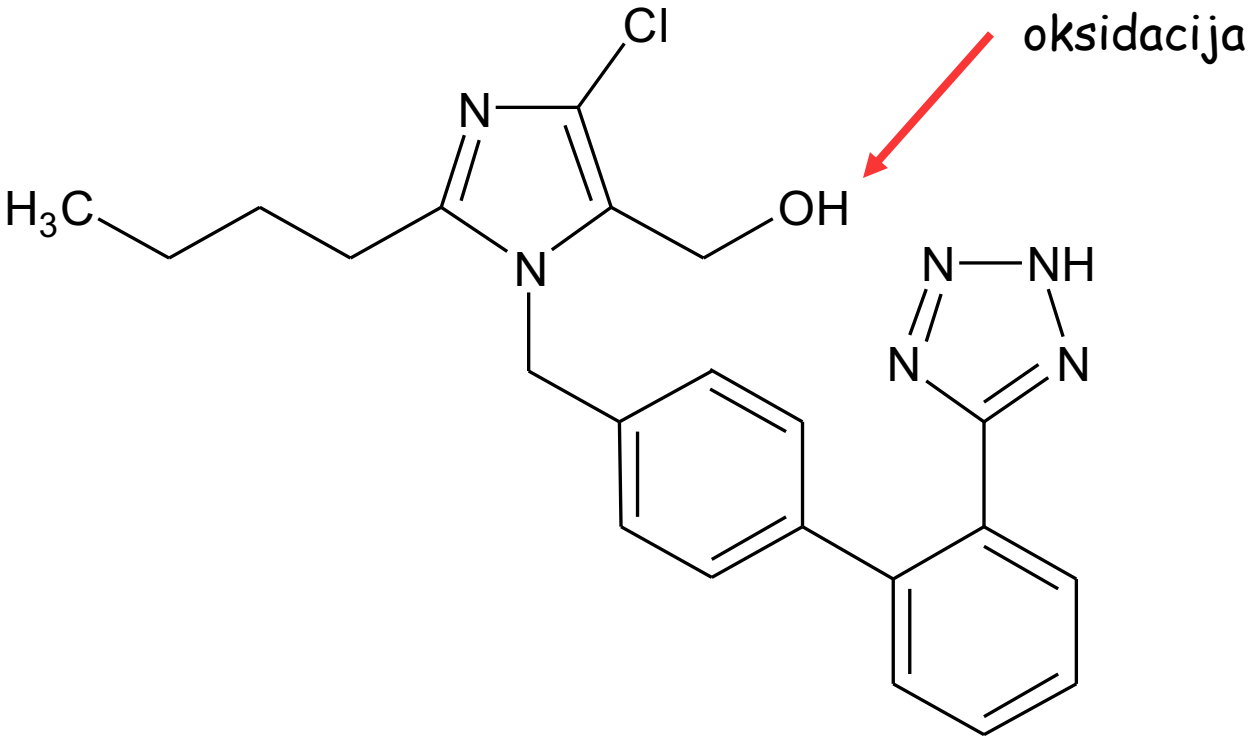
Fosinoprilat

Moguće nuspojave ACE inhibitora jesu hipotenzija, kašalj.

Bioaktivacija fosinoprila



9) Antagonisti AT_1-receptora *"sartani"*

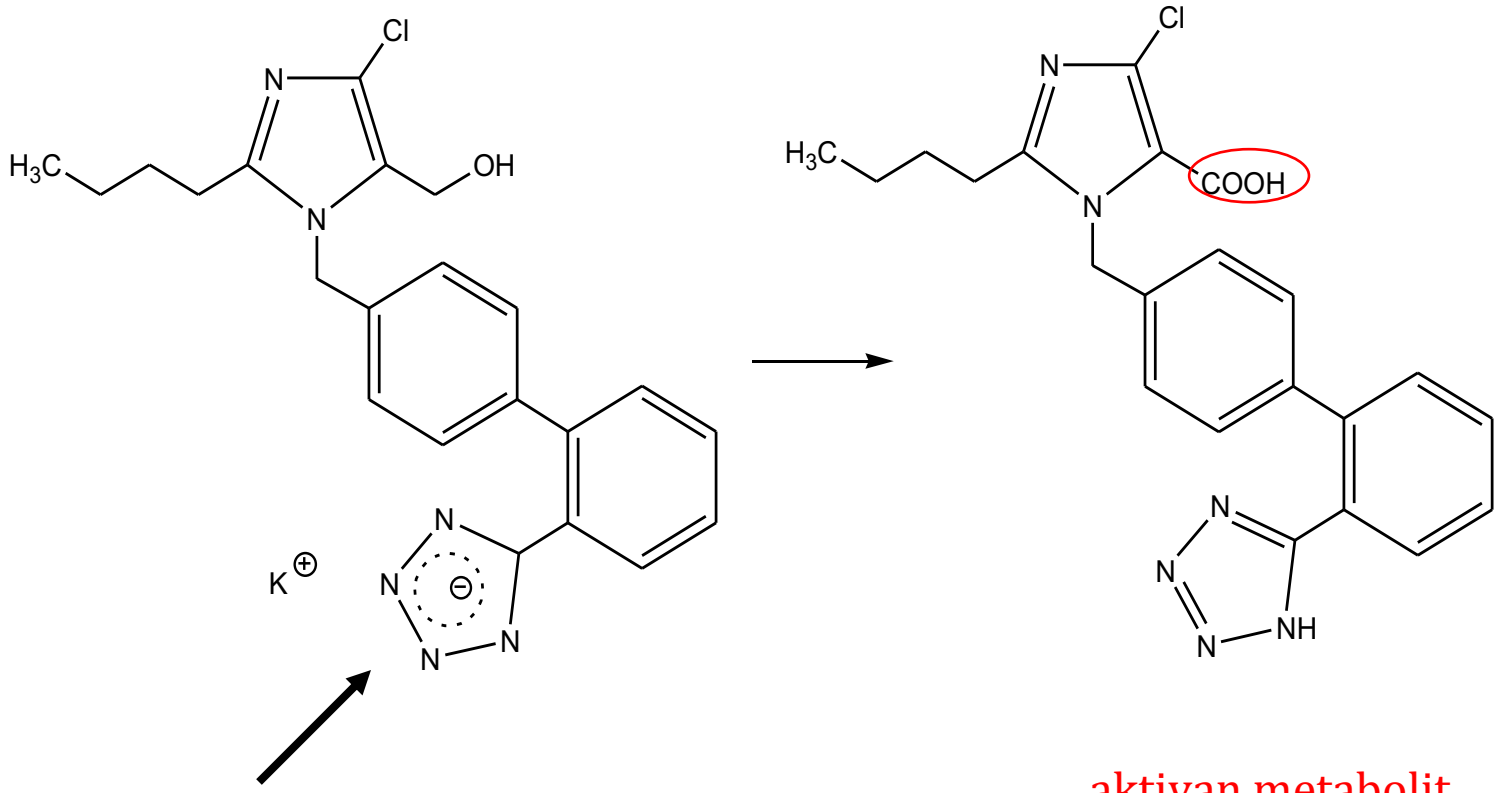


Losartan

blokira sva djelovanja angiotenzina II

2-butil-4-hloro-1-[p-(o-1*H*-tetrazol-5il-fenil)benzil]imidazol-5-metanol

METABOLIZAM PRVOG PROLAZA



Kiseo proton tetrazola

aktivan metabolit

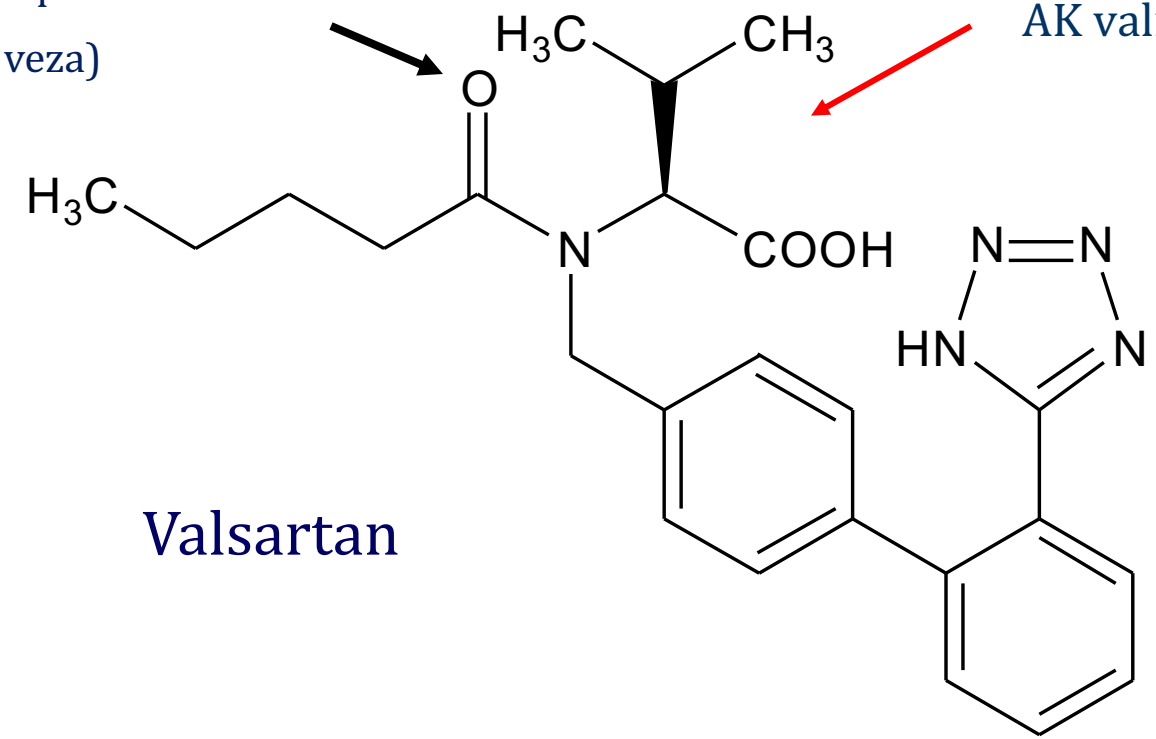
Kisele osobine potiču od protona tetrazola koji gradi stabilne soli kalijuma.

Akceptor vodonika

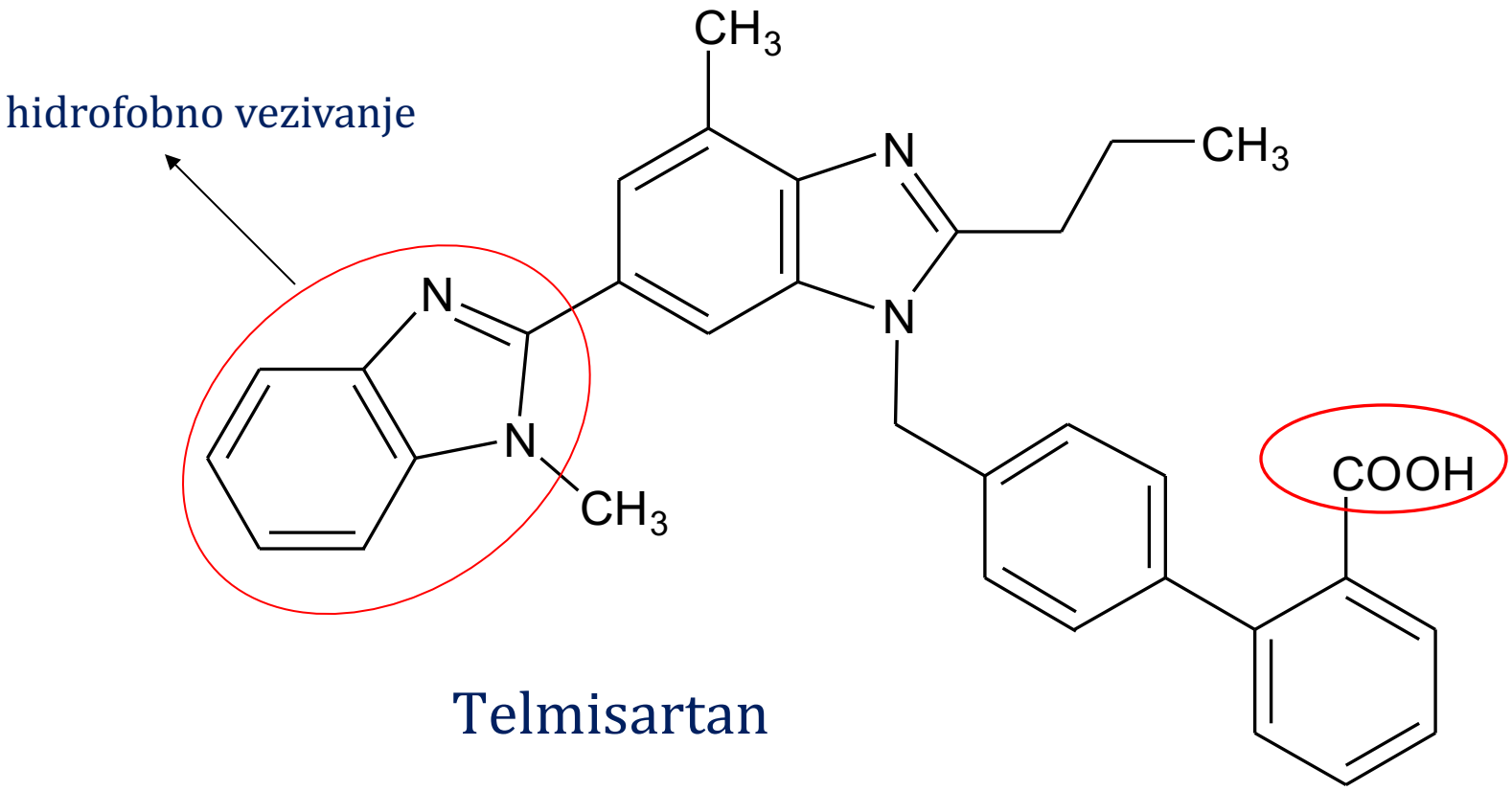
(H veza)

AK valin umesto imidazola

valeril-L-valin

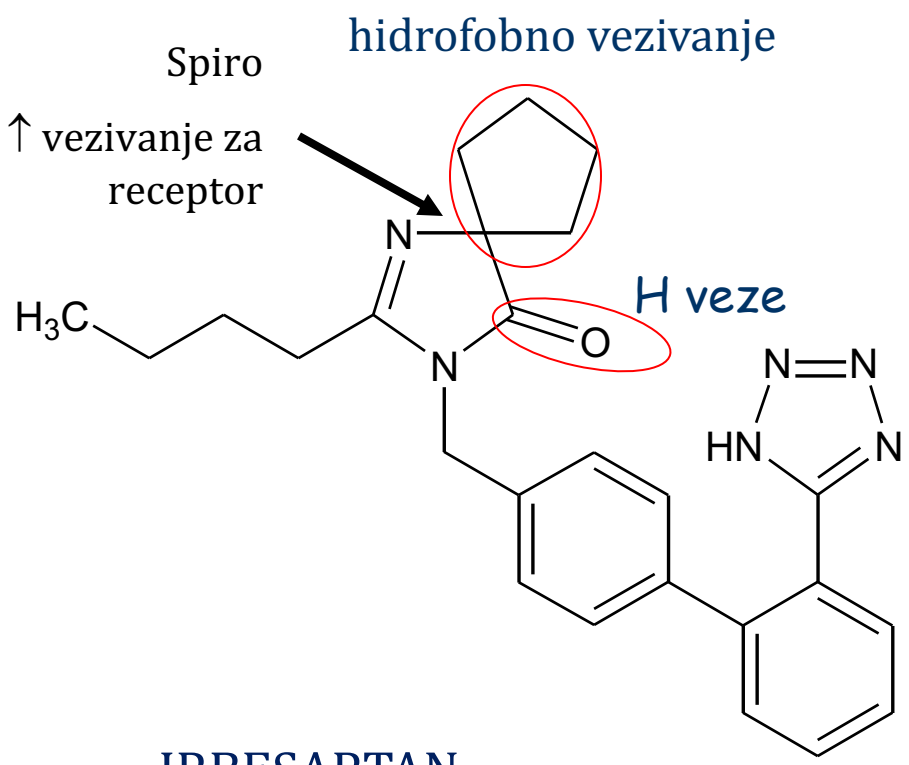


Valsartan

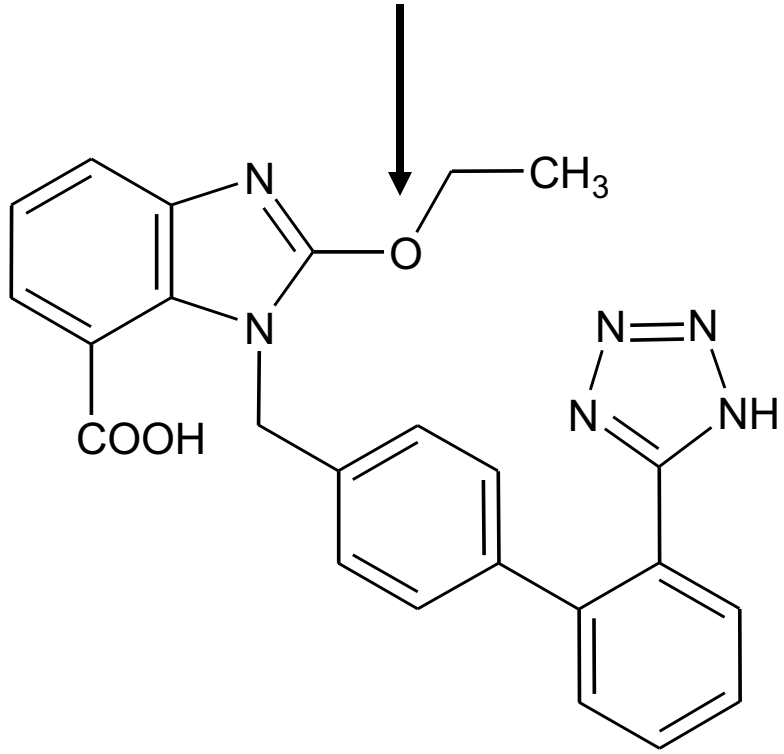


Telmisartan

-(4-{[4-metil-6-(1-metil-1*H*-1,3-benzimidazol-2-il)-2-propil-1*H*-1,3-benzimidazol-1-il]metil} fenil) benzoeva kis.

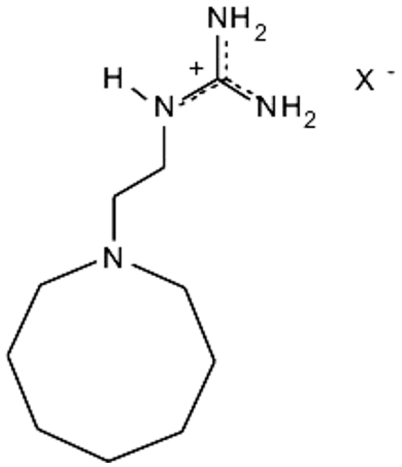


IRBESARTAN



KANDESARTAN

GVANETIDIN

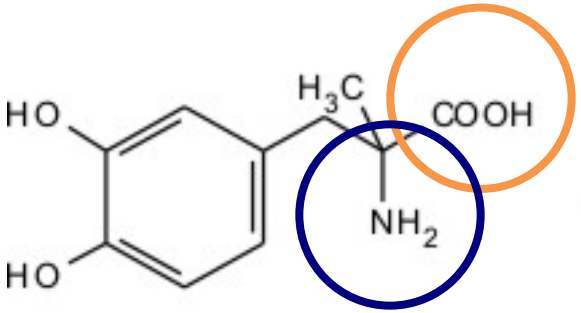


Nomenklatura:

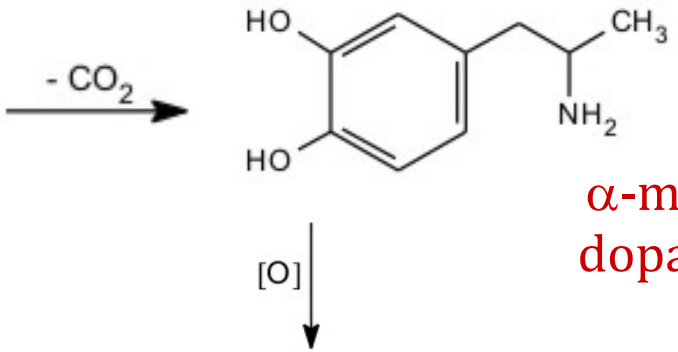
2-(2-(oktahidro-1-azocinil)etil)gvanidin

N-(2-(perhidro-azocin-1-il)etil) gvanidin

1. Koji je mehanizam djelovanja gvanetidina?
2. Da li ovo jedinjenje ima neželjene CNS efekte?
3. Napisati oficinalan gvanetidin monosulfat.

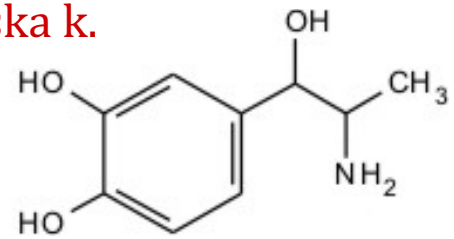


α-METIL DOPA



α-metil-
dopamin

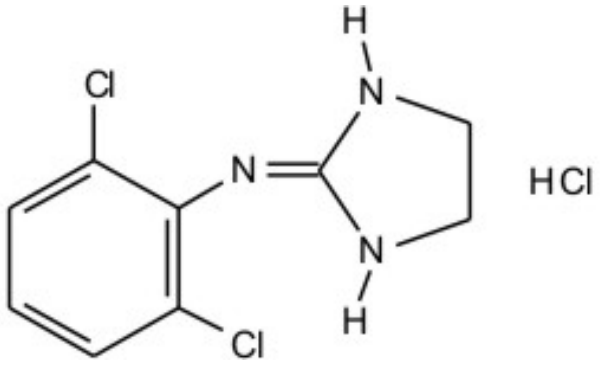
(2*S*)-2-amino-3-(3,4-dihidroksifenil)-2-metilpropanska k.



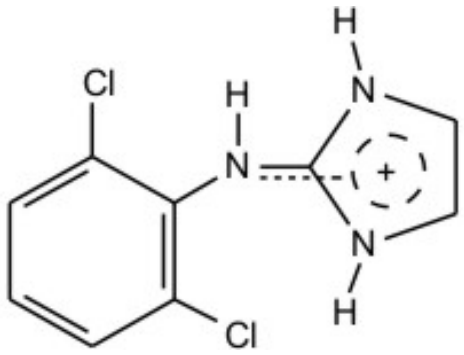
α-metil-
noradrenalin

Obasniti mehanizam djelovanja α-metil DOPA-e?
Da li je α-metil dopa *pro drug*?
Koji neželjeni efekti nastaju?

U kom obliku postoji lijek na fiziološkoj pH?
Kako MD prolazi KMB?
Da li je lijek stabilan na MAO i COMT?



HCl

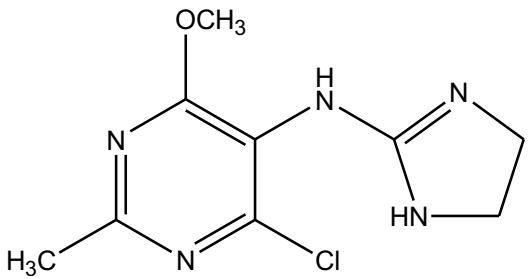


X^-

Nomenklatura: **KLONIDIN**

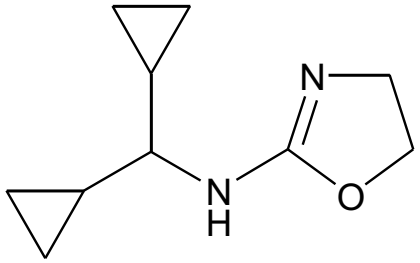
N-(2,6-dihlorofenil)imidazolidin-2-imin

1. Koji je mehanizam djelovanja ovog jedinjenja?
2. U kom obliku se lijek nalazi u fiziološkim uslovima? Nacrtati strukturu.
3. Koji je glavni metabolit? Da li je on aktivan?



MOKSONIDIN

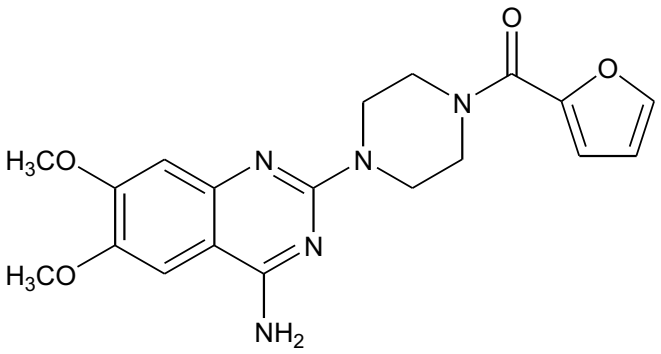
4-hloro-6-metoksi-2-metil-5-(2-imidazolin-2-il)aminopirimidin



RILMENIDIN

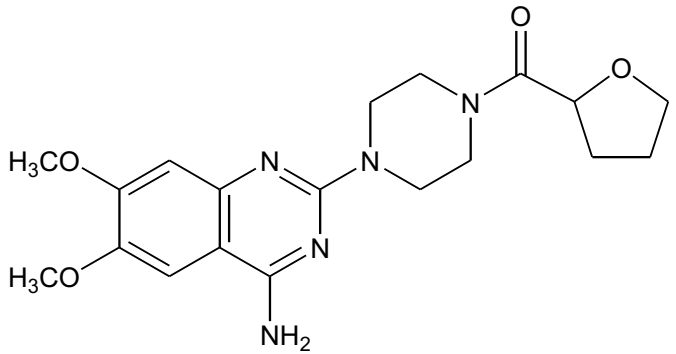
N-(diciklopropilmetil)-4,5-dihidro-2-oksazolamin

Za koje receptore se vezuju prikazana jedinjenja?
Koja je terapijska indikacija?



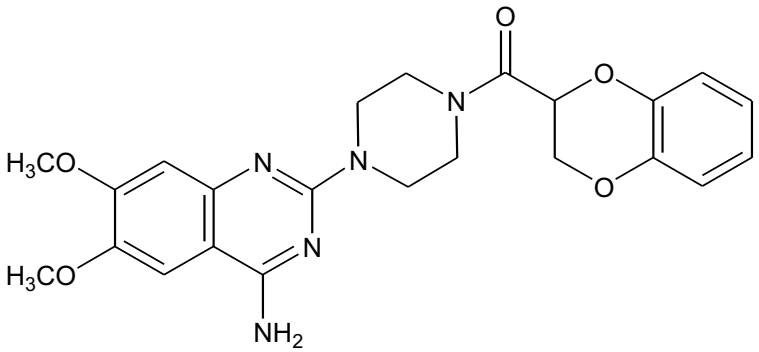
PRAZOSIN

1-(4-amino-6,7-dimetoksi-2-hinazolinil) - 4-2-(furanilkarbonil)piperazin



TERAZOSIN

1-(4-amino-6,7-dimetoksi-2-hinazolinil)-4 -[(tetrahidro-2-furanil) karbonil] piperazin

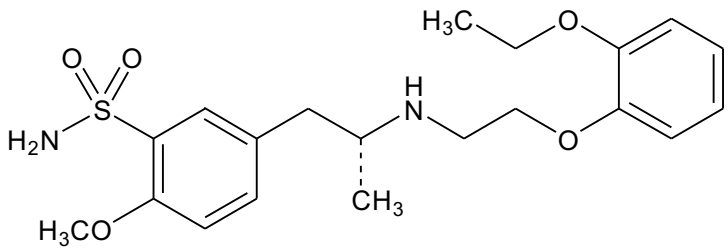


DOKSAZOSIN

Imenovati heterocikluse u navedenim strukturama.

1-(4-amino-6,7-dimetoksi-2-hinazolinil)-4-[(2,3-dihidro-1,4-benzodioksin-2-il)karbonil] piperazin

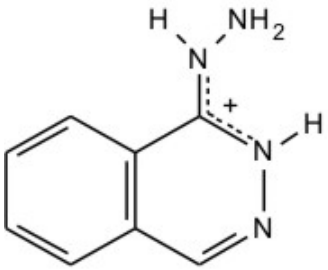
- U koju grupu po mehanizmu djelovanja se svrstavaju?
- U koju terapijsku grupu se svrstavaju?
- U koju hemijsku grupu se svrstavaju?



TAMSULOZIN

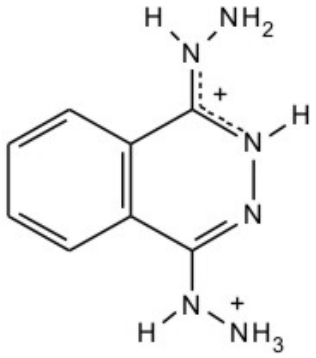
(R)-5-[2-[[2-(2-etoksifenoksi)etil]amino]propil]-2-metoksibenzen-sulfonamid

Koja je terapijska indikacija ovog lijeka?



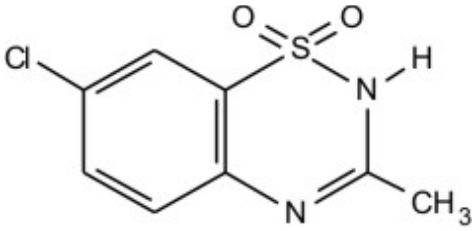
HIDRALAZIN

1-hidrazinilftalazin



DIHIDRALAZIN

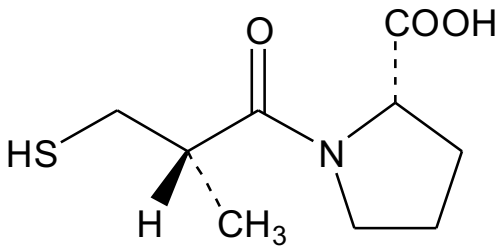
1,4-dihidrazinilftalazin



DIAZOKSID

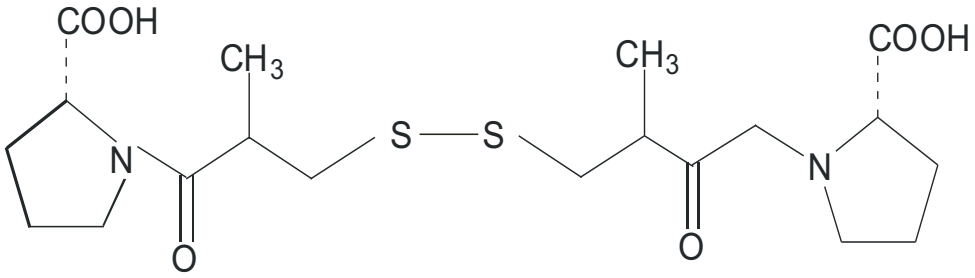
7-hlor-3-metil-2H-1,2,4-benzotiadiazin-1,1-dioksid

Koji heterociklus je u osnovi?



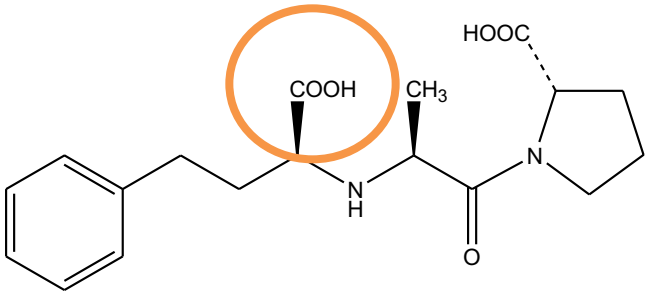
KAPTOPRIL

Napisati oksidacioni proizvod kaptoprila koji nastaje u *in vitro* i u *in vivo* uslovima:

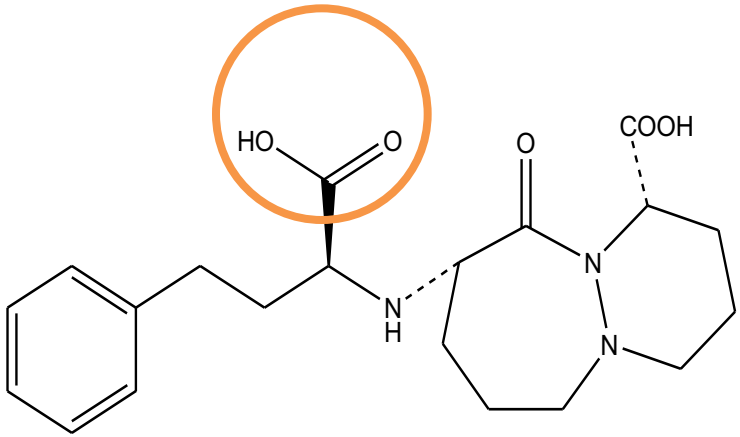


Do kojih neželjenih efekata može dovesti prisustvo –SH grupe?

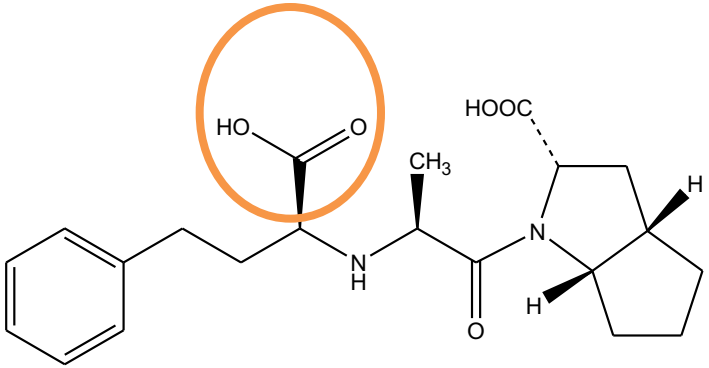
Da li su prikazana jedinjenja polarna?
Koja karboksilna grupa se esterifikuje pri građenju *pro drug* formi?



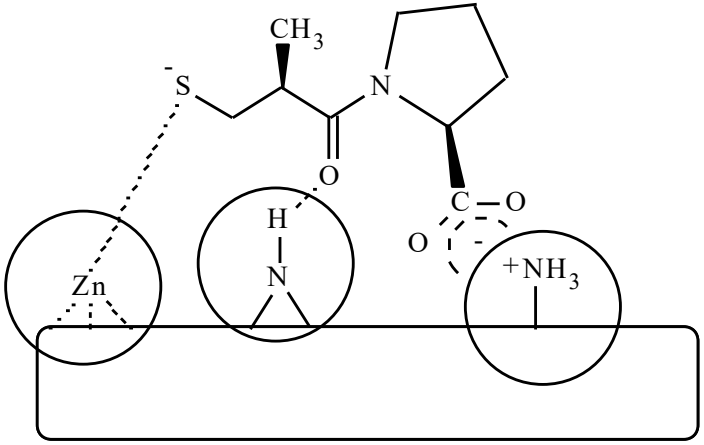
ENALAPRILAT



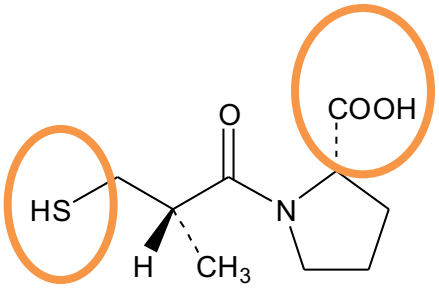
CILAZAPRILAT



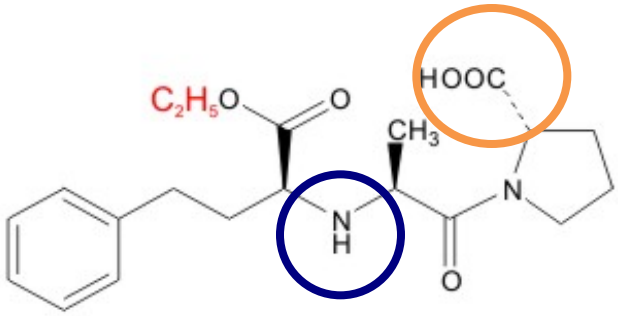
RAMIPRILAT



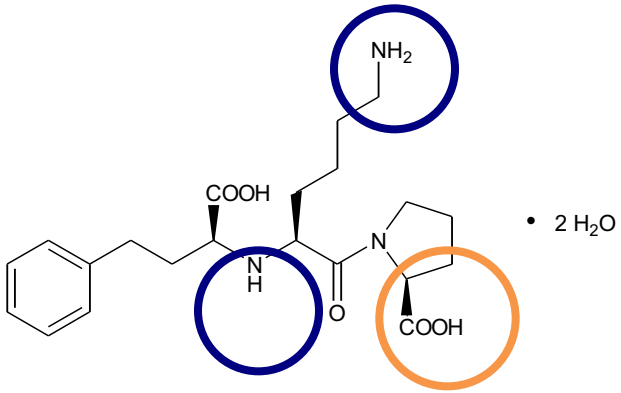
Koji od navedenih ljekova su *pro drug*?



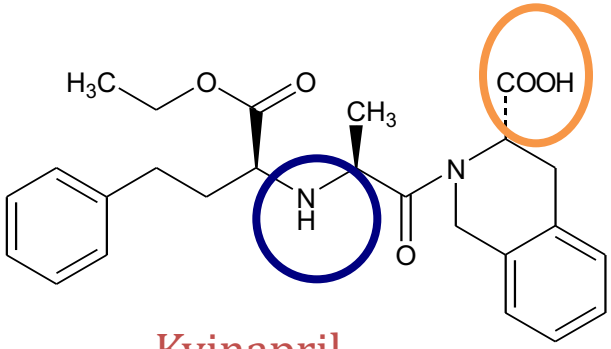
Kaptopril



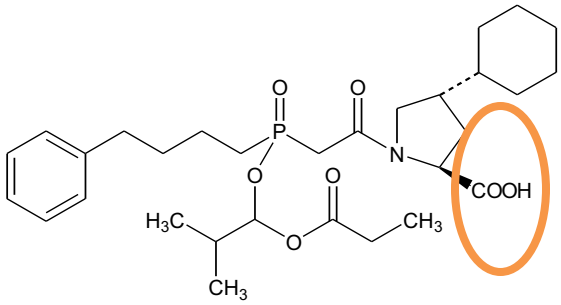
Enalapril



Lisinopril



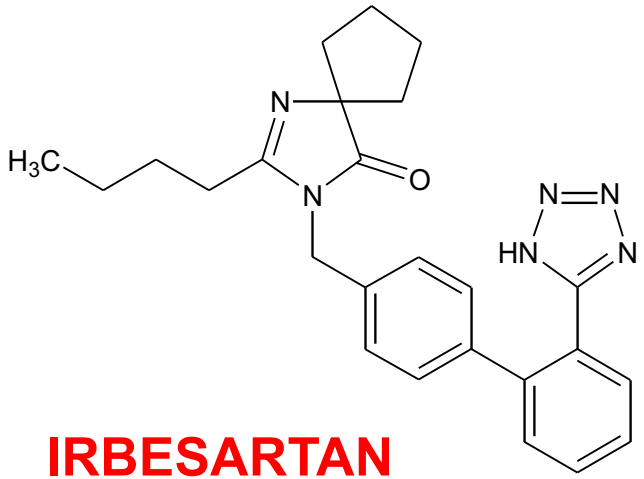
Kvinapril



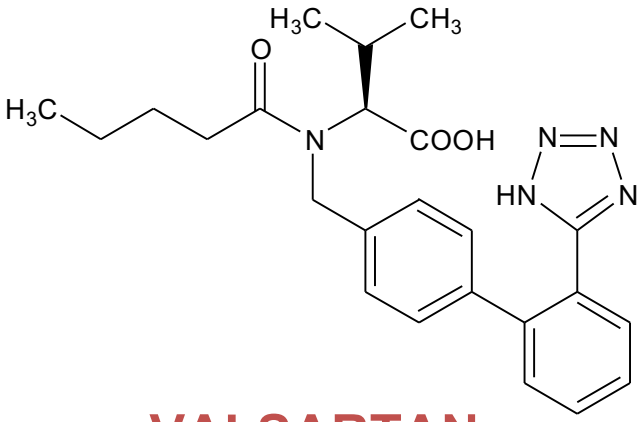
Fosinopril

Razvrstati prikazana jedinjenja prema kiselim/baznim/amfoternim osobinama.

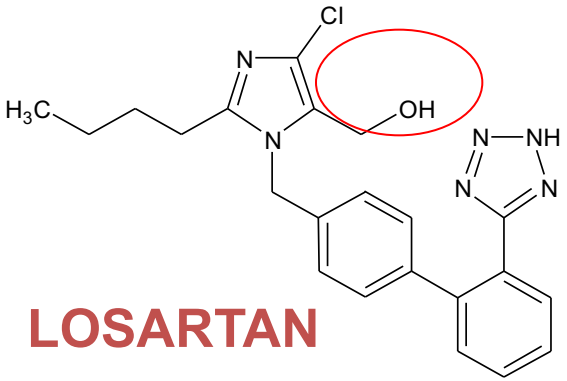
Koji je mehanizam dejstva prikazanih jedinjenja?



IRBESARTAN

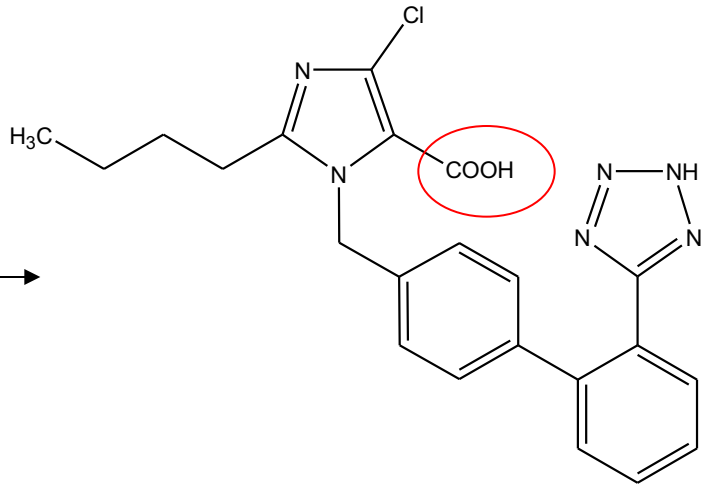


VALSARTAN



LOSARTAN

A

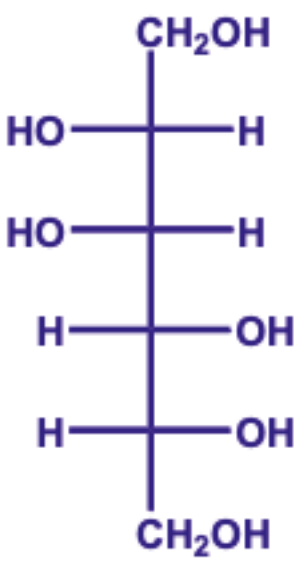


A

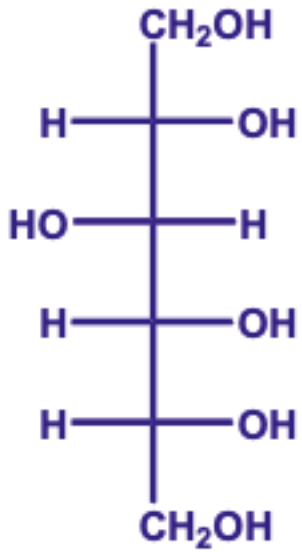
Nacrtati aktivni metabolit losartana

DIURETICI

1. Osmotski diuretici (Henleova petlja, proksimalni tubul)



Manitol



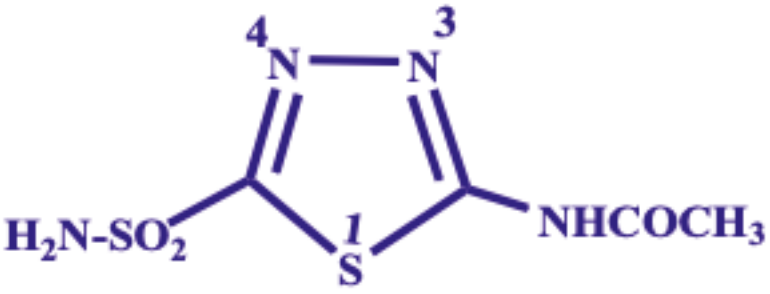
Sorbitol

Soli: CH_3COOK, Na_2SO_4, PO_4^{3-}, HCO_3^-, CH_3COO^-
Urea (karbamid) NH_2-CO-NH_2
Kiseli diuretik-so NH_4Cl

2. Inhibitori karboanhidraze (proksimalni tubul)

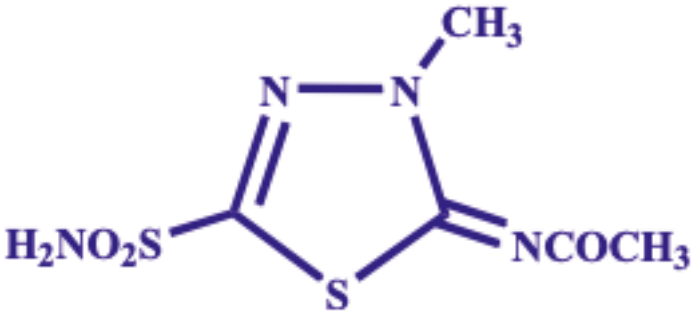
1. Monosulfonamidi- inhibitori CA
2. m-Disulfonamidi

Monosulfonamidi: Inhibitori CA



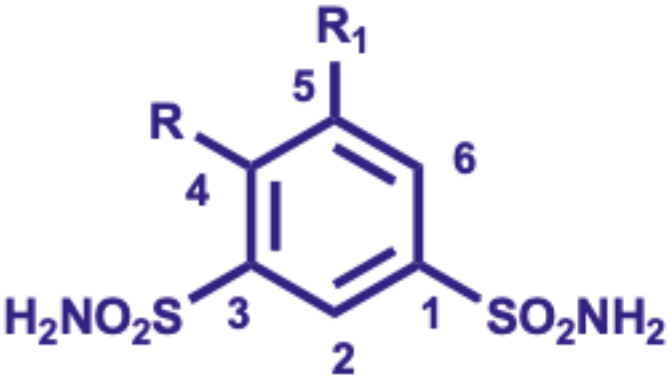
Acetazolamid

N-[(5 aminosulfonil)-1,3,4-tiadiazol-2 il)]-acetamid

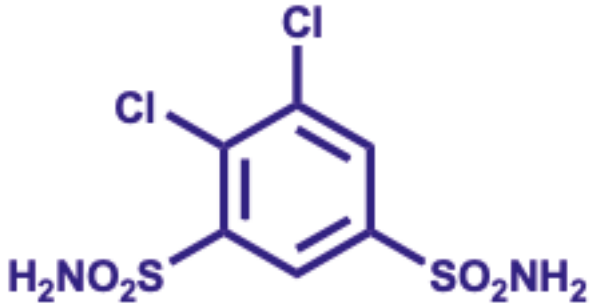


Metazolamid

m-Disulfonamidi

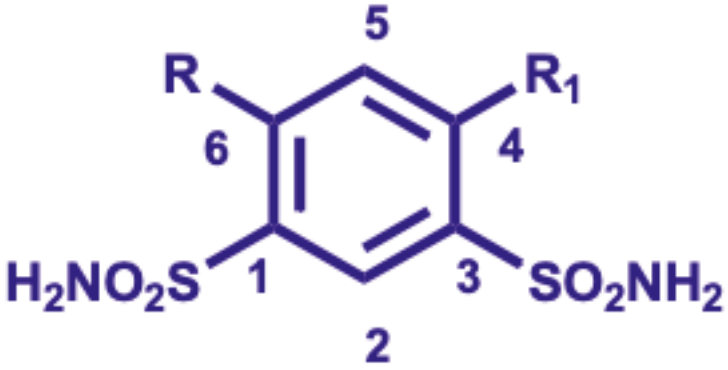


4,5 disupstituisani



Dihlorfenamid (glaukom)

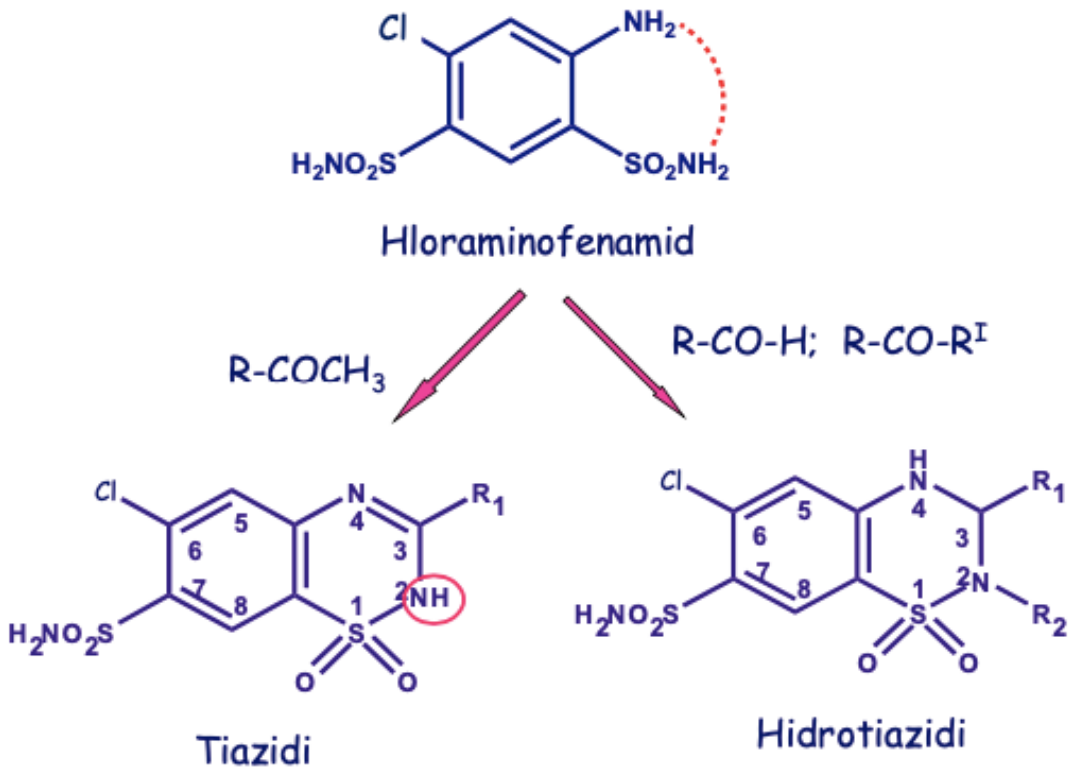
4,5-dihlor-1,3-benzendisulfonamid

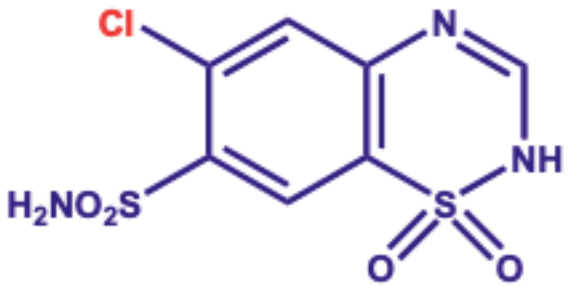


4,6 disupstituisani

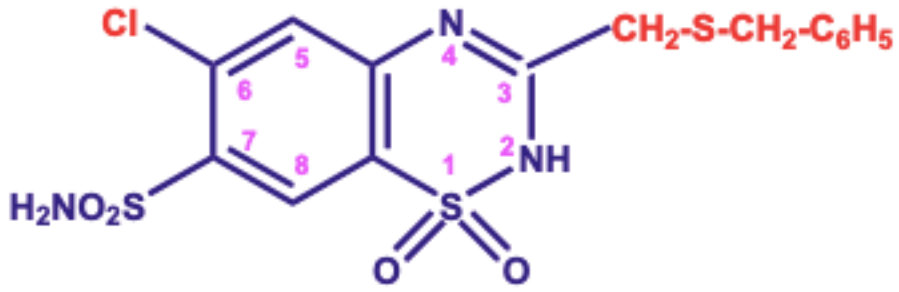
R, R_1 = Cl, Br, NO_2, CF_3

3. Tiazidi i hidrotiazidi (originalno sintetisani kao inhibitori CA).

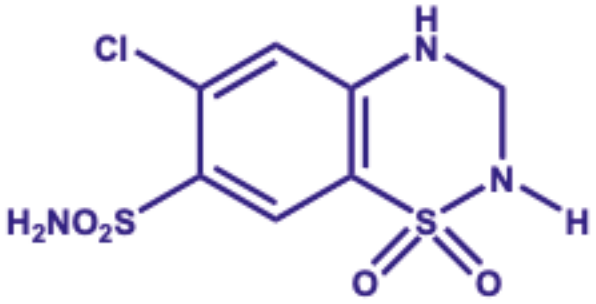




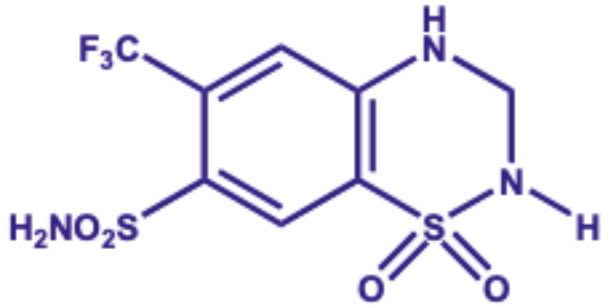
Benztiazid (12-18h)



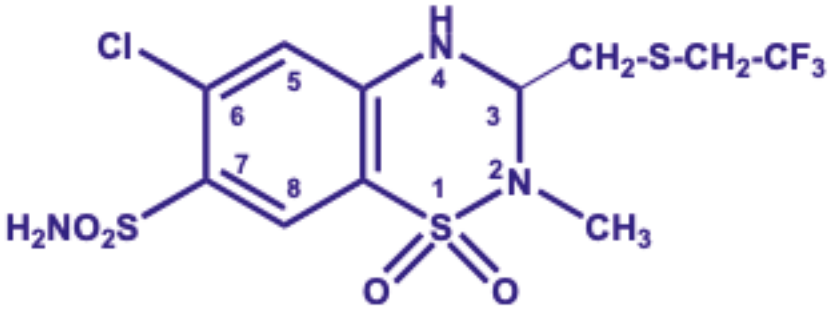
Hlortiazid (6-12 h)



Hidrohlortiazid



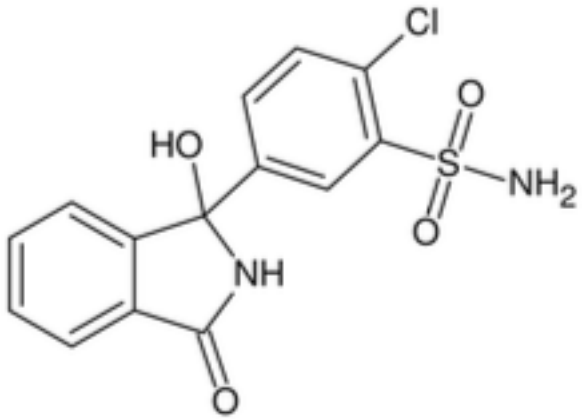
Triflumetazid



Politiazid (24 h)

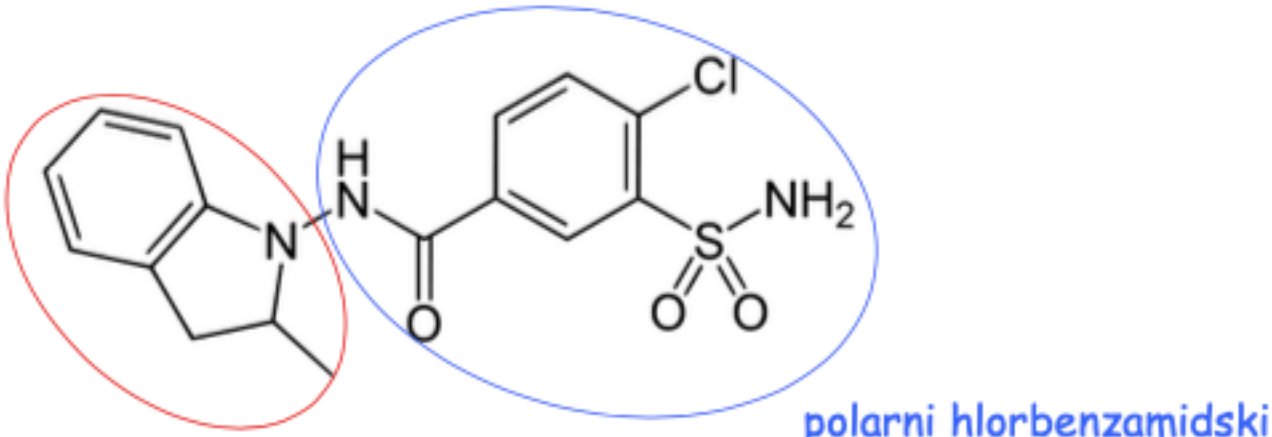
6-hlor-3,4-dihidro-2-metil-3[[(2,2,2-trifluoroetil)tio]metil]-2-H-1,2,4-benzotiadiazin-7-sulfonamid-1,1-dioksid

Tiazidima slični diuretici: hlortalidon i indapamid



- Hlortalidon (48-72 h)
- 2-hloro-5-(1-hidroksi-3-okso-1-izoindolinil)-benzensulfonamid

Indapamid – "Arifon"



polarni hlorbenzamidski deo

nepolarna metilindolinska grupa

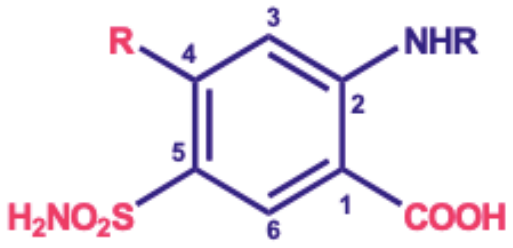
3-(aminosulfonil)-4-hlor- N-(2,3-dihidro-2-metil-1 H- indol-1-il) benzamid

4. Diuretici Henleove petlje

- Podjela prema hemijskoj strukturi:

1. Sulfonamidski diuretici
2. α,β-nezasićeni ketoni fenoksisirćetne kiseline

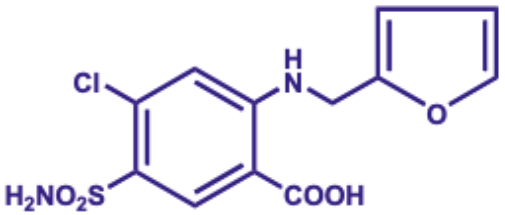
Sulfonamidski diuretici
(Derivati 5-sulfamoil-2 ili 3- aminobenzoeve kiseline)



R= Cl, CF_3, -OR

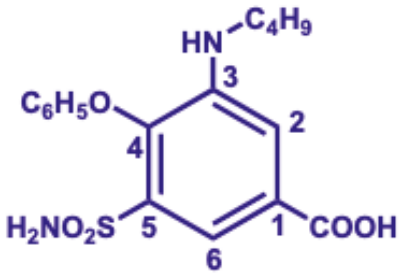
5-sulfamoil-2-aminobenzoeva kiselina

5-sulfamoil-3-aminobenzoeva kiselina



Furosemid (Lasix)

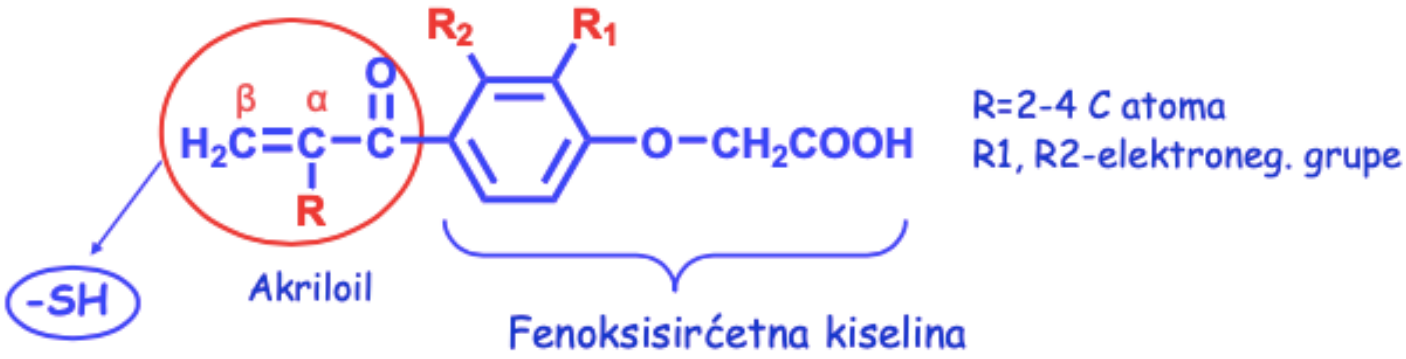
5-(Aminosulfonil)-4-hlor-2-[(2-furanilmetil) amino] benzoeva kiselina

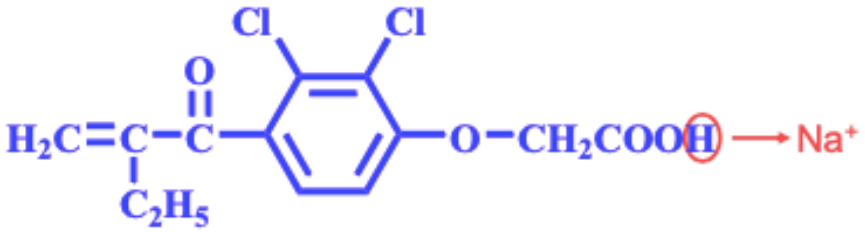


Bumetanid

3-(butilamino)-4-fenoksi-5-sulfamoil benzojeva kiselina

α, β – nezasićeni ketoni-nije sulfonamid !



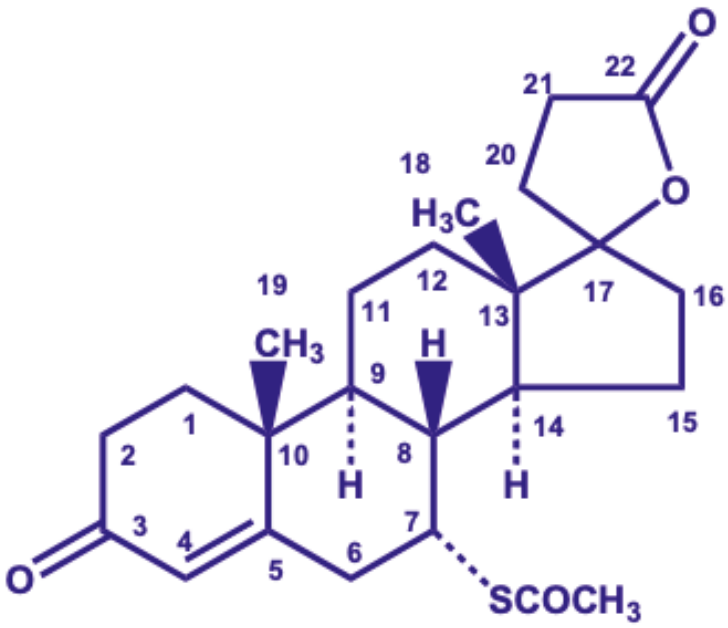


Etakrinska kiselina

[2,3-dihlor-4-(2-metilen-1-oxo-butil) fenoksi]-sirćetna kiselina

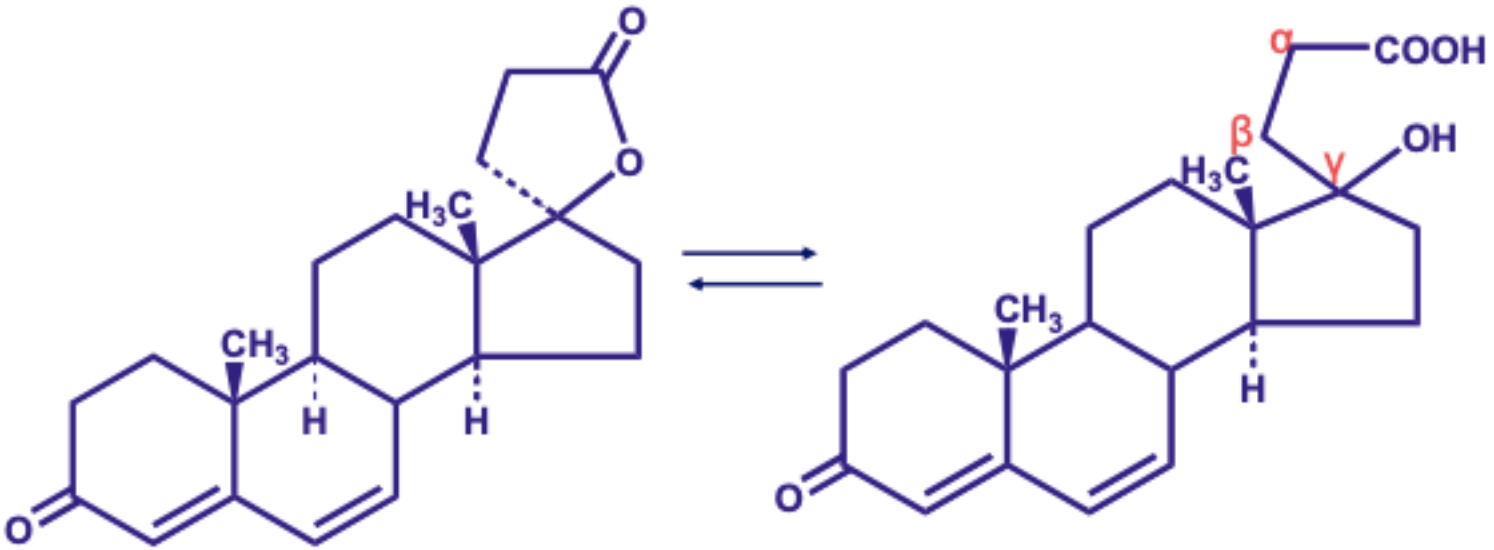
5. Diuretici koji štede kalijum (sabirni kanalić)

- Antagonisti aldosterona



Spironolakton
Aldakton

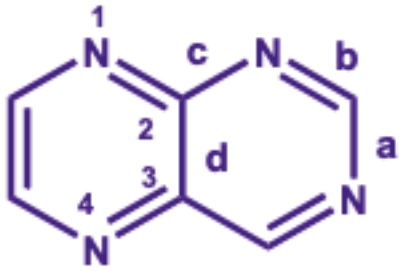
7 α-(acetiltio)-17β-hidroksi-3-okso-pregna-4en-
21-karboksilne kiseline-γ-lakton



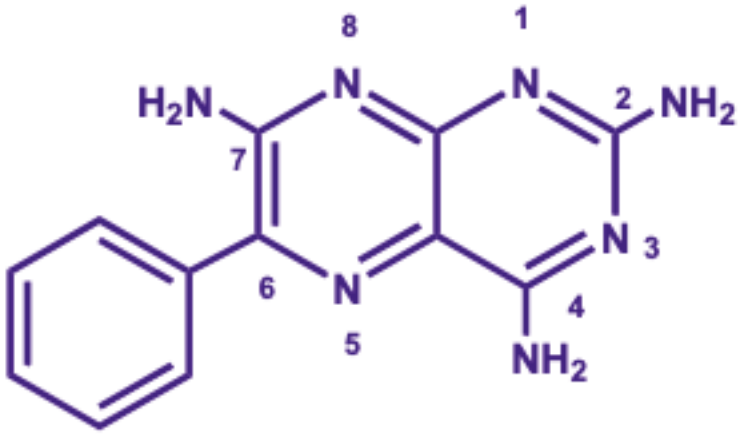
Kanrenon

Glavni aktivni metabolit

Derivati pteridina



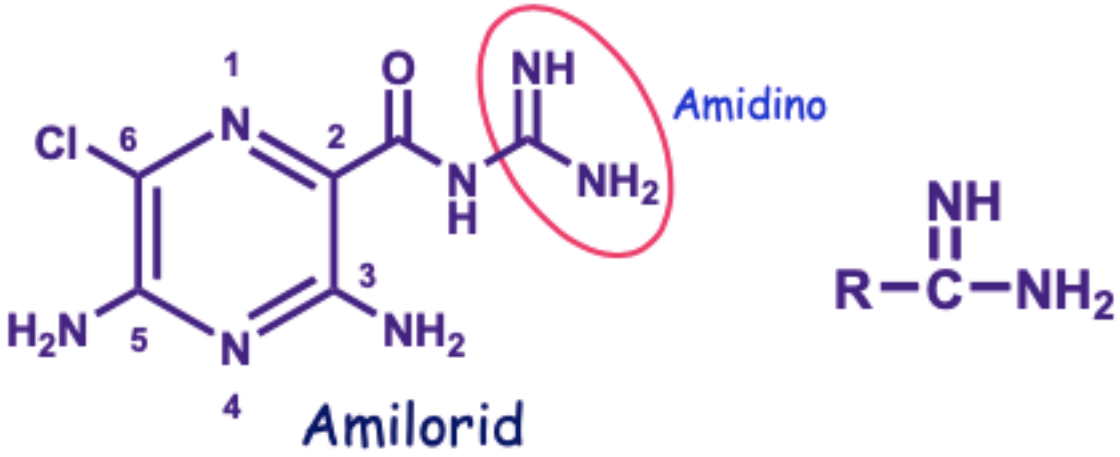
Pteridin = pirazino [2,3-d] pirimidin



Triamteren

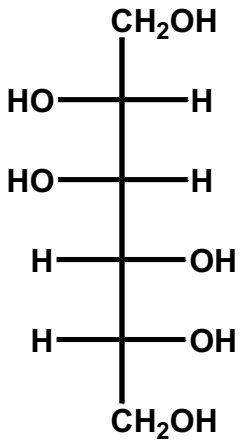
2,4,7-triamino-6-fenil pteridin

Aminopirazin



N-amidino-3,5-diamino-6-hlor-pirazinkarboksamid

DIURETICI

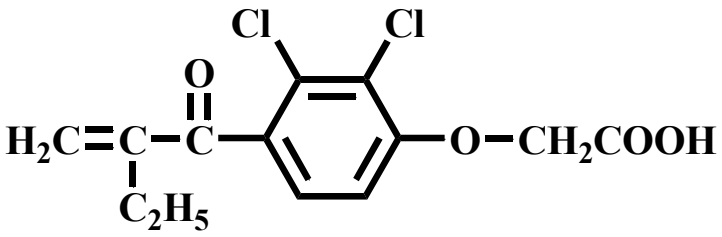


MANITOL

Kojoj hemijskoj grupi pripada?

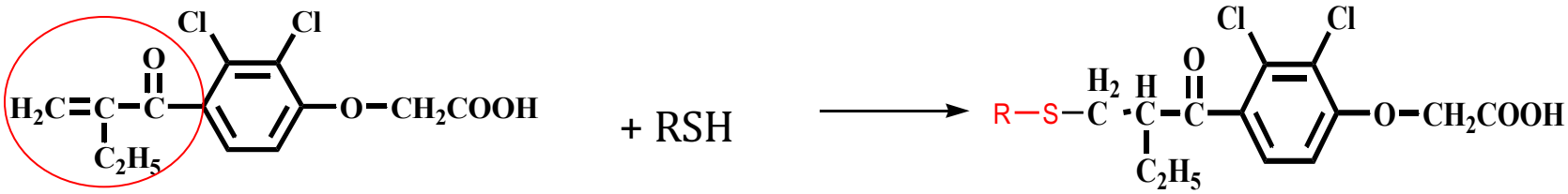
Kojoj grupi po mehanizmu djelovanja pripada?

Da li može da se primijeni *per os*?



ETAKRINSKA KISELINA

[2,3-dihlor-4-(2-metilen-1-okso-butil) fenoksi]-sirćetna kiselina

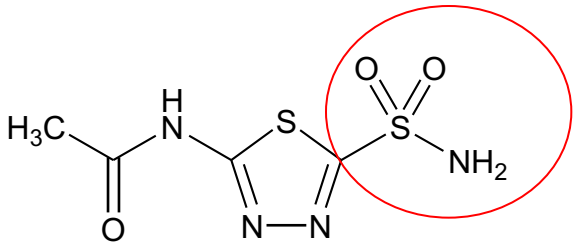


Koji je mehanizam djelovanja? Prikazati reakcijom.

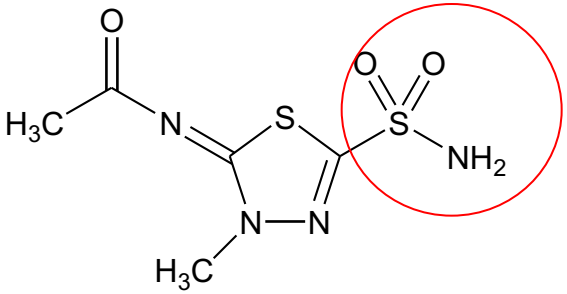
Koji dio strukture je važan za dejstvo?

Koji su neželjeni efekti?

Koji su mogući putevi primjene?



ACETAZOLAMID



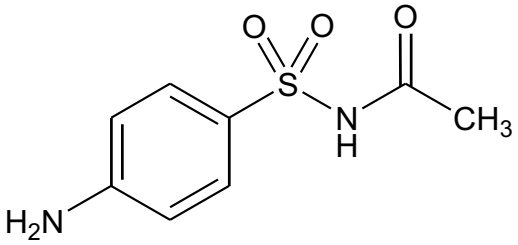
METAZOLAMID

N-[(5 aminosulfonil)-1,3,4-tiadiazol-2 il)-acetamid

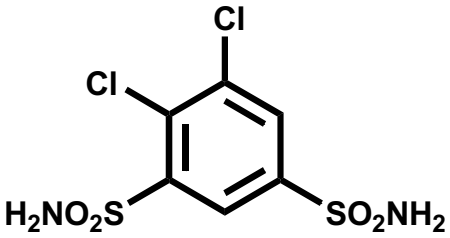
Koji je mehanizam djelovanja?

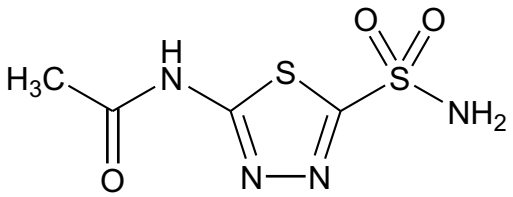
Koja grupa je neophodna za dejstvo?

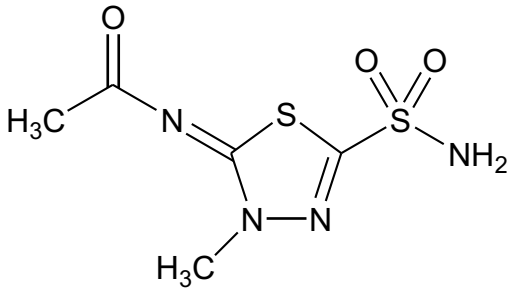
Da li sulfacetamid ima diuretička svojstva?



Koja su neželjena dejstva inhibitora karboanhidraze?
Koja je terapijska indikacija za primjenu ovih ljekova?
Da li se koriste kao diuretici?

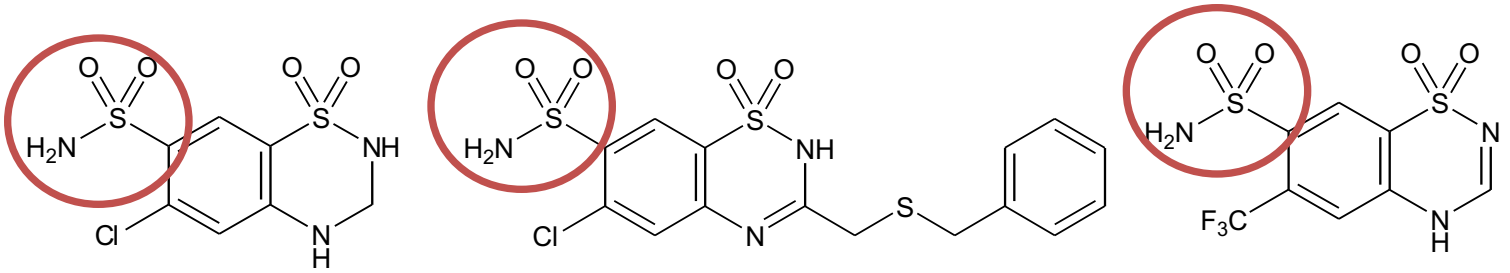






Povezati pojmove iz kolone A sa kolonom B

KOLONA A	KOLONA B
Terapijska grupa	Inhibitori karboanhidraze
Hemijska grupa	Acidoza
Terapijska indikacija	Sulfonamidi
Terapijska kontraindikacija	Glaukom
Grupa po mehanizmu djelovanja	Diuretici, snižavaju intraokularni pritisak

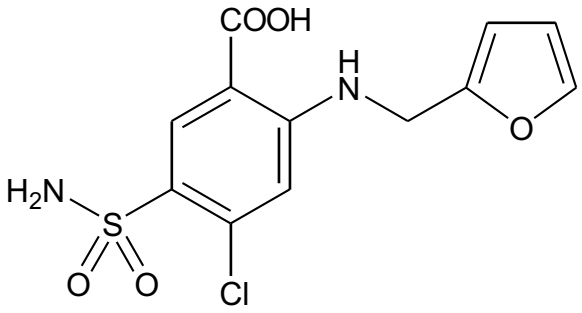


prikazana jedinjenja

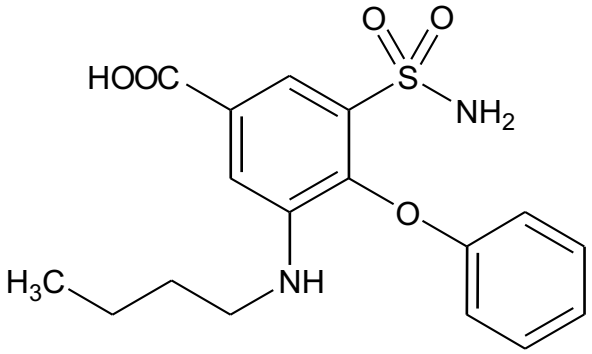
1. su tiazidni diuretici	da	ne
2. štede kalijum	da	ne
3. se razlikuju po trajanju dejstva	da	ne
4. se koriste kod hipertenzije	da	ne
5. mogu da izazovu urtikariju (crvenilo kože)	da	ne

Zaokružiti strukturu zbog koje može da se javi urtikarija

Koji je mehanizam djelovanja ovih diuretika?



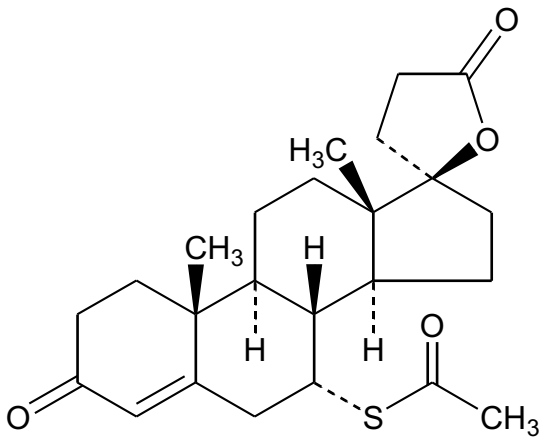
FUROSEMID



BUMETANID

Zaokružiti tačne odgovore:

1. Bumetanid je aktivniji od furosemida
2. Ne mogu da se primene per os
3. Vezuju se u velikom procentu za proteine plazme
4. Jedinjenja su bazna
5. Diuretici su Henleove petlje
6. Štede kalijum
7. Ne mogu da izazovu urtikariju

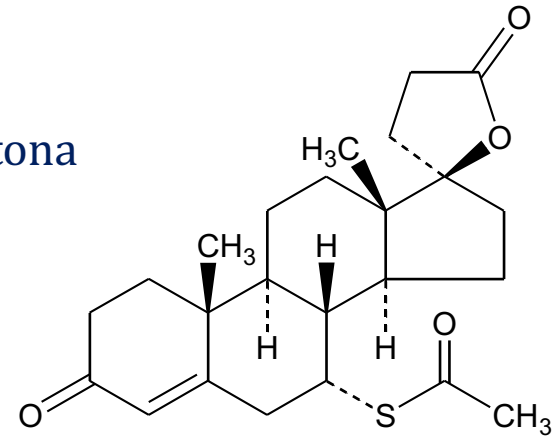


SPIRONOLAKTON

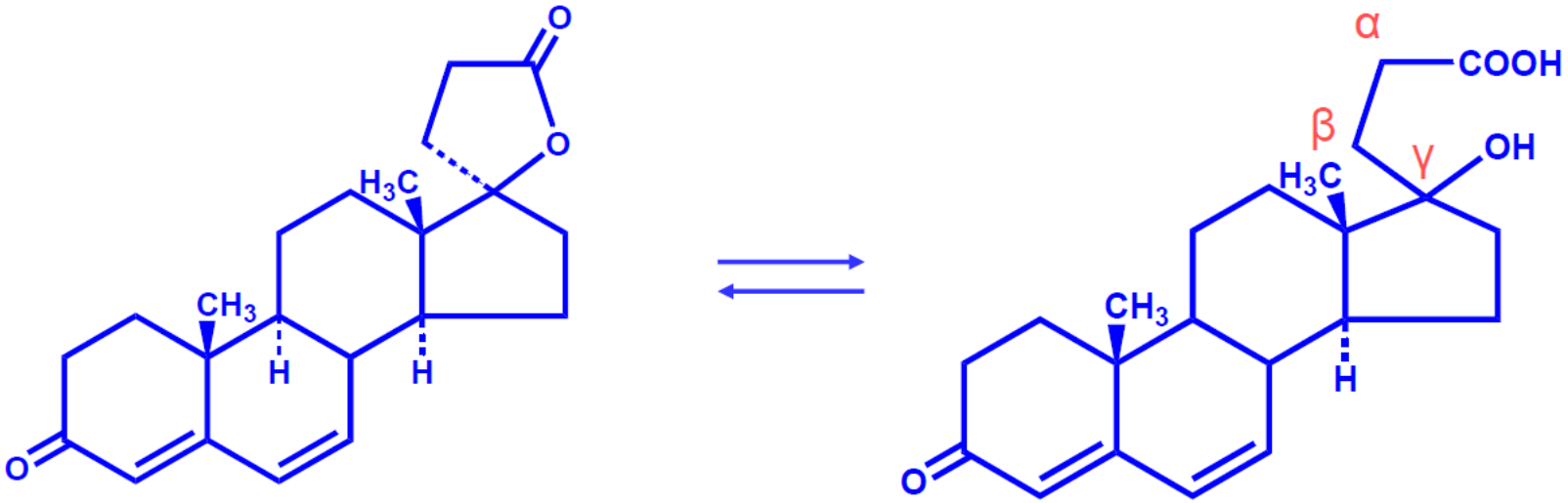
Zaokružiti tačne odgovore:

1. Spironolakton ima steroidnu strukturu
2. Loše se apsorbuje posle per os primene
3. Kod žena može da izazove menstrualne poremećaje
4. Kontraindikovan je sa suplementima kalijuma
5. Neželjeni efekat je ginekomastija kod muškaraca
6. Diuretik je Henleove petlje
7. Ima aktivan metabolit
8. Obično se primjenjuje u terapiji sa tiazidima
9. Spironolakton je pro drug

- Napisati aktivni metabolit spironolaktona



Da li je spironolakton *pro drug*?

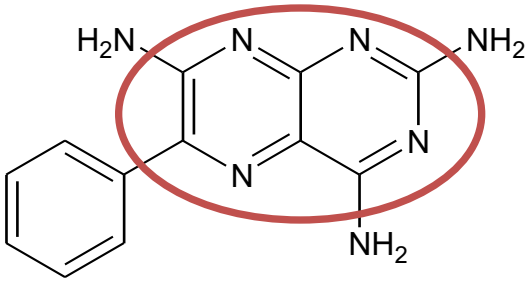


Kanrenon

Aktivna forma

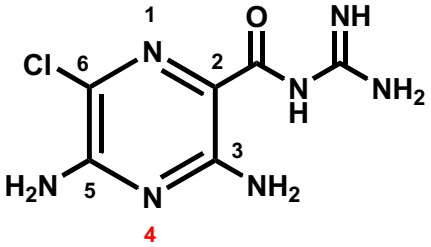
Glavni aktivni metabolit spironolaktona

Antagonista aldosterona



TRIAMTEREN

Imenovati zaokruženi heterociklus



AMILORID

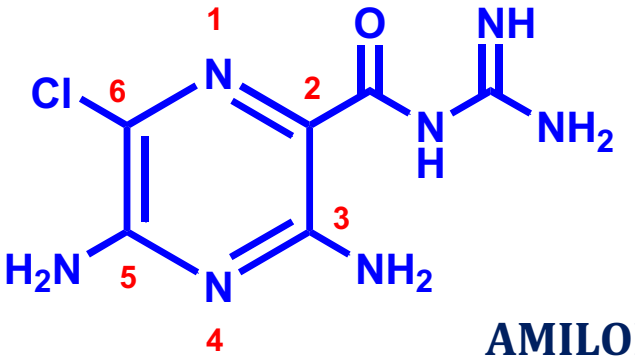
Da li se amilorid dobro apsorbuje pri *per os* primjeni?

Da li su ovi diuretici kontraindikovani kod hipokalijemije?

Na osnovu datih nomenklatura nacrtati strukture jedinjenja.
Koji im je mehanizam dejstva?

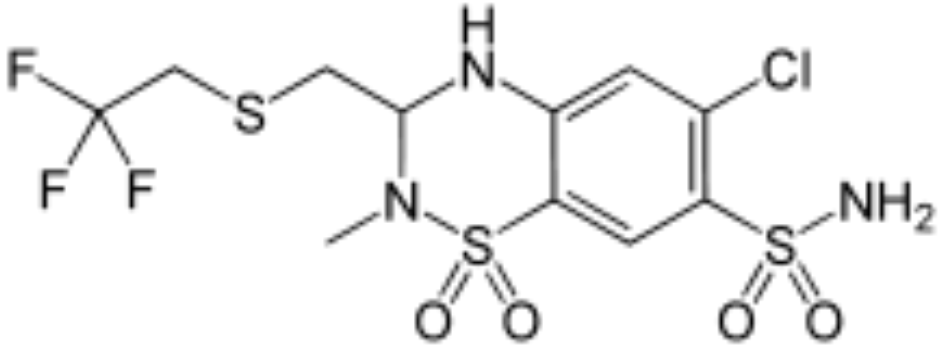
N-amidino-3,5-diamino-6-hlor-pirazinkarboksamid

1-(3,5-diamino-6-hloropirazinkarbonil)gvanidin



AMILORID

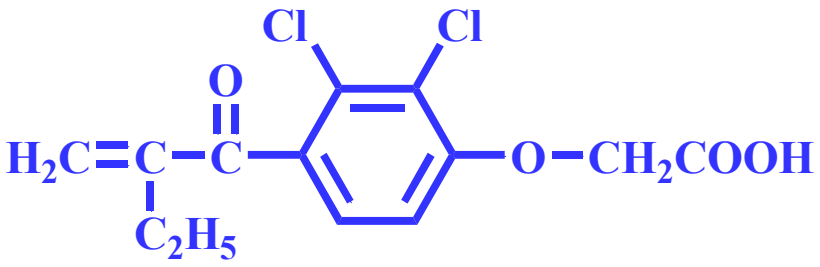
6-hloro-3,4-dihidro-2-metil-3-[[(2,2,2-trifluoroetil)tio]metil]-2 H- 1,2,4-benzotiadiazin-7-sulfonamid 1,1-dioksid



POLITIAZID

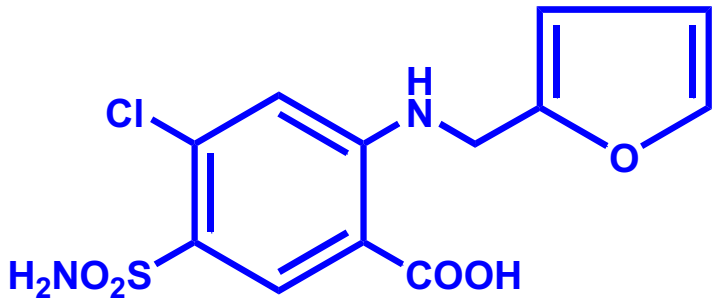
Na osnovu datih nomenklatura nacrtati strukture jedinjenja.
Koji im je mehanizam dejstva?

[2,3-dihlor-4-(2-metilen-1-oxo-butil) fenoksi]-sirćetna kiselina



ETAKRINSKA KISELINA

5-(Aminosulfonil)-4-hlor-2-[(2-furanilmetil)amino] benzojeva kiselina



FUROSEMID


Thank you