Tehnološko-metalurški fakultet
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ISPITIVANJE ANTIOKSIDATIVNE AKTIVNOSTI AZO BOJA NA BAZI 6-HIDROKSI-4-METIL-2-PIRIDONA

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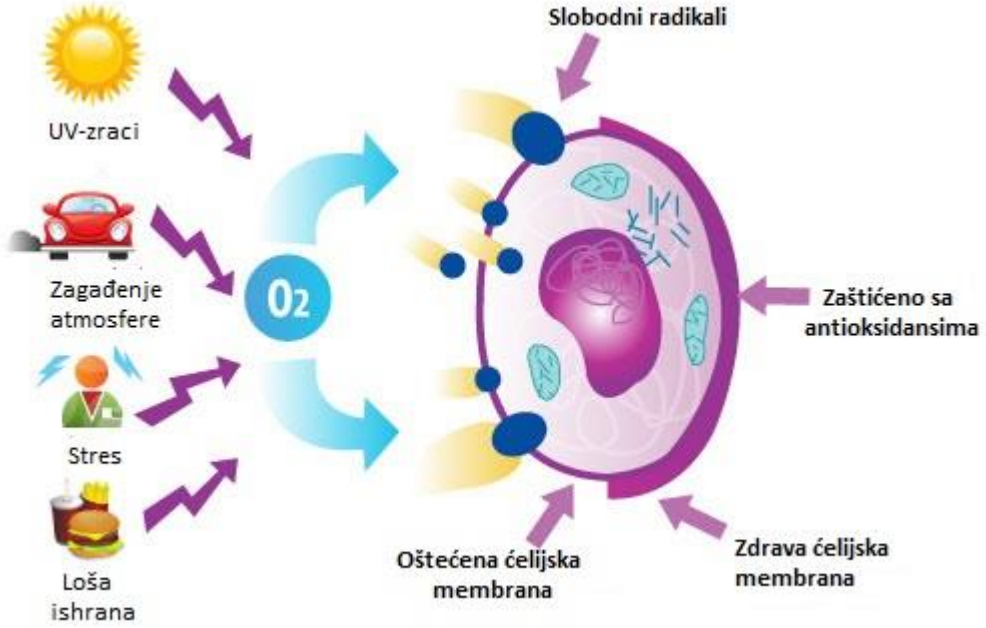
Antioksidansi

- Antioksidansi su supstance koje odlažu ili u potpunosti inhibiraju oksidacione procese.
- Koriste se za stabilizaciju polimernih i petrohemijskih proizvoda, hrane, kozmetike i lekova.
- Mogu da spreče oksidaciju različitih organskih jedinjenja kao što su lipidi, proteini, ugljeni hidrati, DNK i mnoga druga
- Antioksidansi su uključeni u odbrambeni mehanizam organizma i štite ga od štetnih materija koje su najčešće povezane sa napadom slobodnih radikala.



Zašto azo boje

Veliki broj različitih strutkura

aromatični ili heteroaromatični ostatak karbociklični, heterociklični ili alifatični

Jednostavna i ekonomična sinteza

Tekstilna industrija

Bojenje prirodnih i sintetskih vlakana

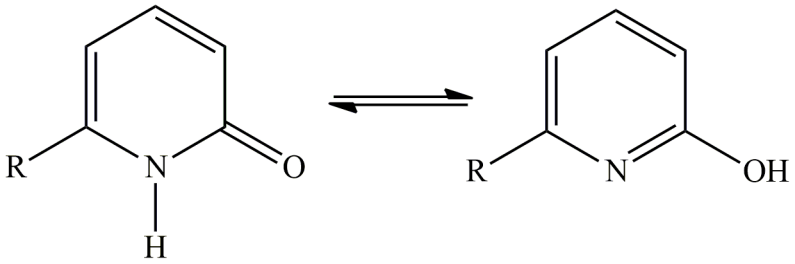
Grafičke boje i pigmenti

Farmakološka primjena, primjena u fotodinamičkoj terapiji

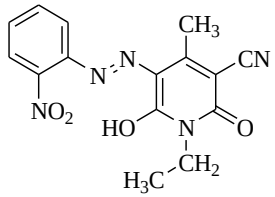
LCD ekrani, optičko skladištenje, solarne ćelije

Prehrambena i kozmetička industrija

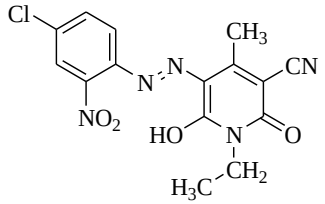
2-Piridoni



- Aromatično heterociklično jedinjenje
- Medicinska istraživnja: antimikrobna, antifungalna, antiinflamatorna, antivirusna, antikancer
- Industrija boja, aditivi za goriva, indikatori



C.I. Disperse Yellow 119



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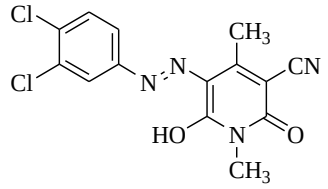
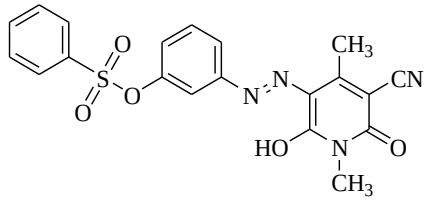


C.I. Disperse Yellow 241



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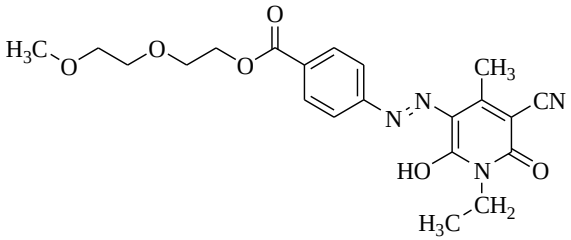
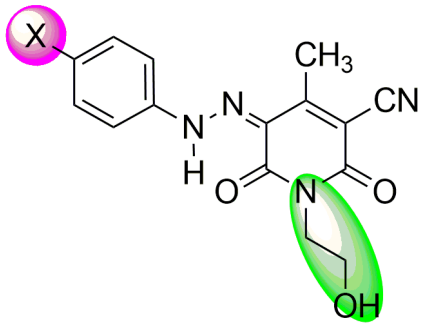
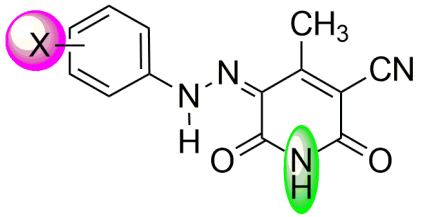


C.I. Disperse Yellow 126

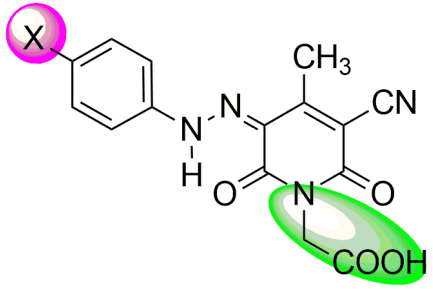
Ispitivana jedinjenja



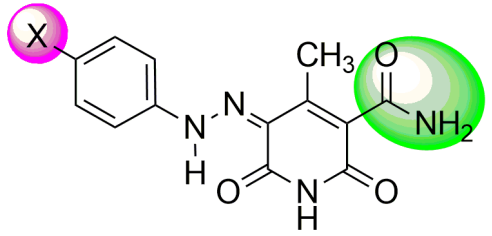
Series A: -OH (A1)
-OMe (A2)
-H (A3)
-NO_2 (A4)



Series B: *p*-OMe (B1)
o-OMe (B2)
-H (B3)
-NO_2 (B4)

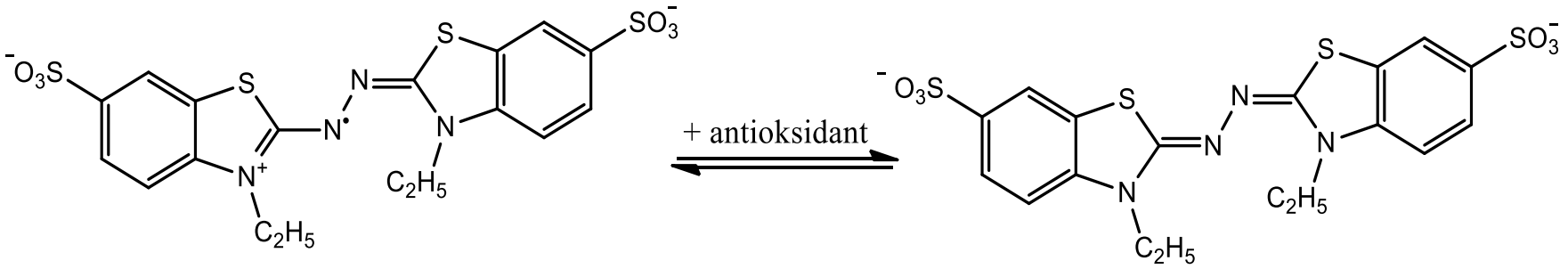


Series C: -OH (C1)
-OMe (C2)
-H (C3)
-NO_2 (C4)

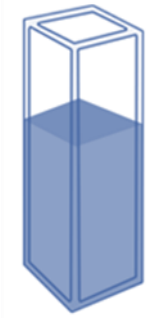


Series D: -OMe (D1)
-Me (D2)
-Cl (D3)
-CN (D4)

ABTS metoda



ABTS $^{\bullet+}$



Rastvor plave boje ABTS$^{\bullet+}$

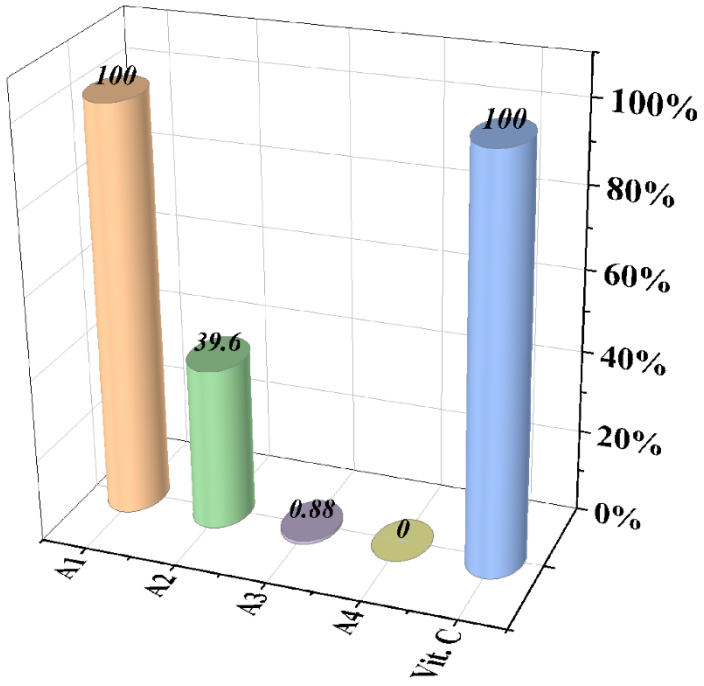
ABTS^{2-}

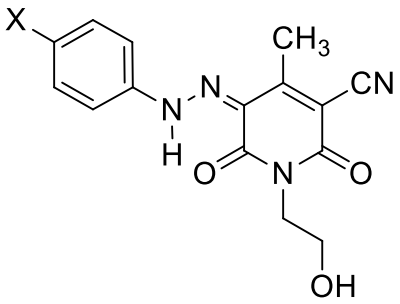
Obezbojeni rastvor ABTS^{2-}

$$ABTS(\%) = \frac{Ac - As}{Ac} * 100$$

Ac-apsorbanca kontrolnog rastvora
As- apsorbanca uzorka

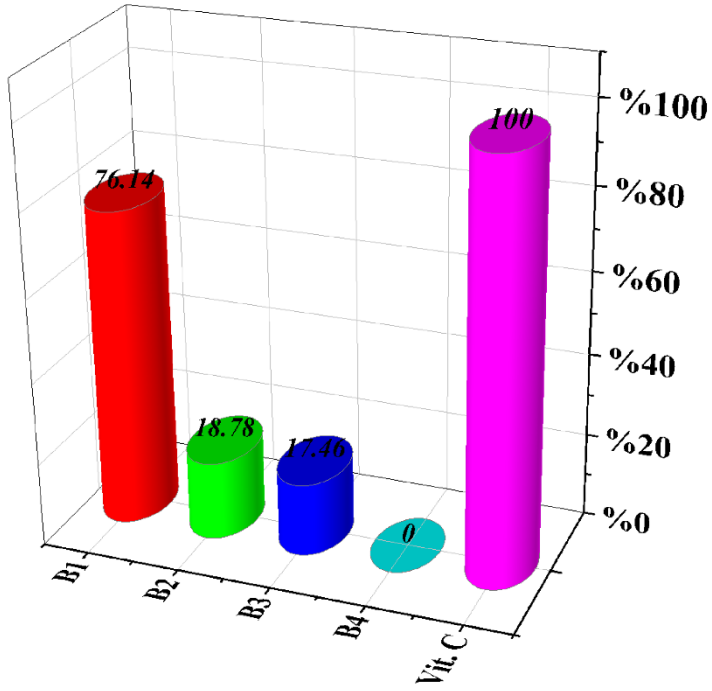
Serija A

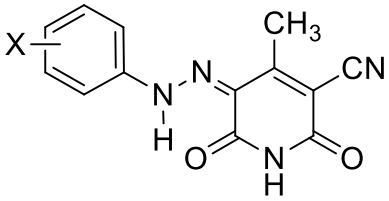




Series A: -OH (A1)
-OMe (A2)
-H (A3)
-NO_2 (A4)

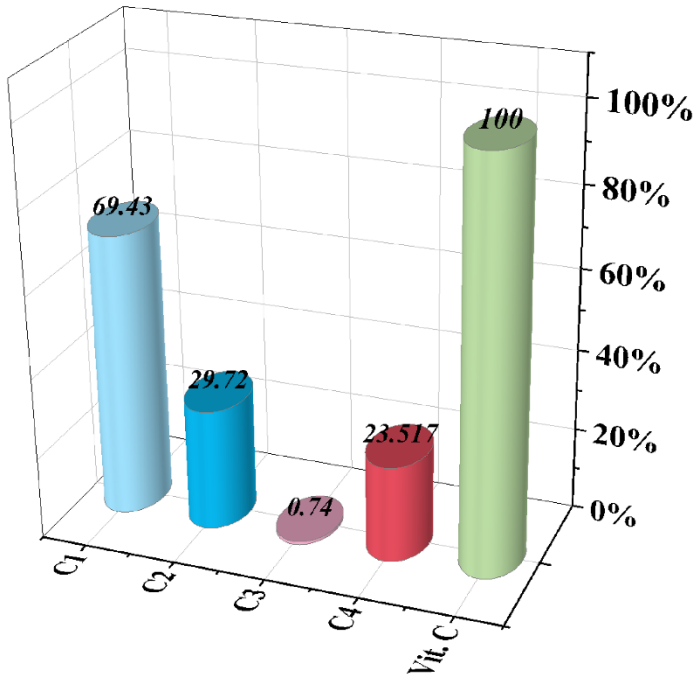
Serija B

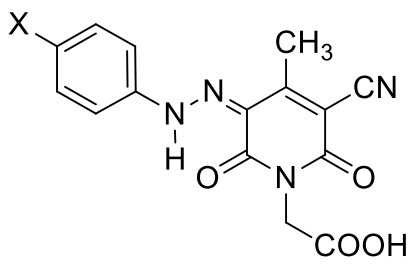




Series B: p-OMe (B1)
o-OMe (B2)
-H (B3)
-NO_2 (B4)

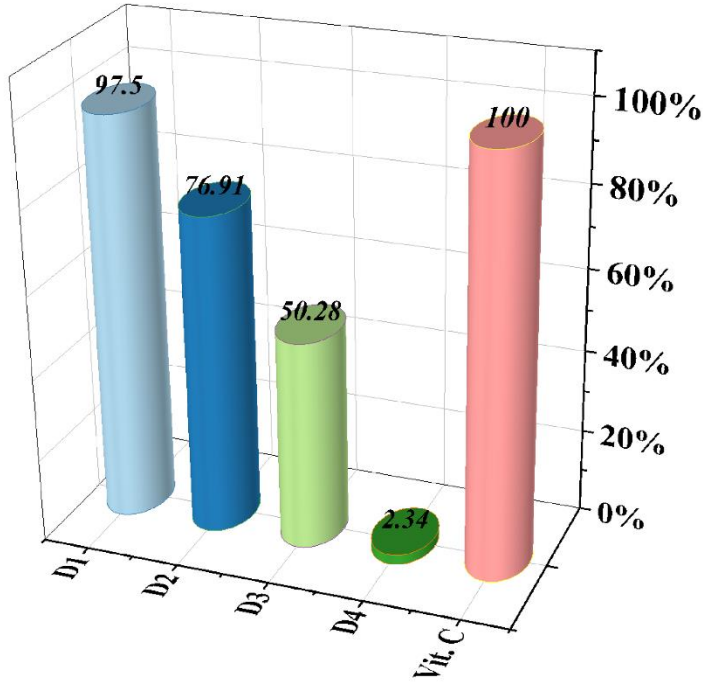
Serija C

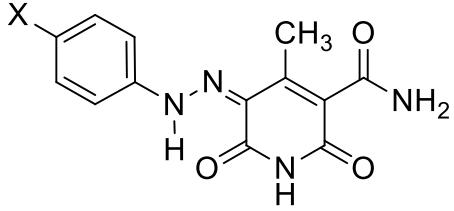




Series C: -OH (C1)
-OMe (C2)
-H (C3)
-NO_2 (C4)

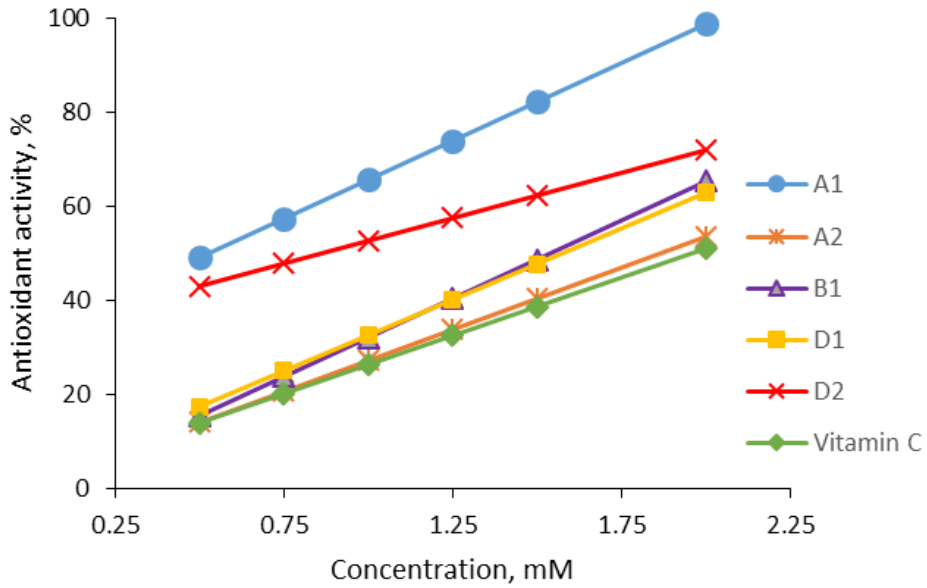
Serija D





Series D: -OMe (D1)
-Me (D2)
-Cl (D3)
-CN (D4)

IC_{50} vrijednosti



Jedinjenje	IC_{50} / mM
A1	0.525
A2	1.863
B1	1.538
D1	1.582
D2	0.859
Vit. C	1.956

Zaključak

- Antioksidativna aktivnost četiri serije jedinjenja je ispitana i upoređena sa vitaminom C koristeći ABTS test
- Boje sa elektron-akceptorskim grupama u fenilnom jezgru pokazuju slabu do umjerenu antioksidativnu aktivnost
- Boje sa elektron-donorima pokazuju značajnu antioksidativnu aktivnost, posebno u *p*-položaju fenilnog jezgra
- 5 boja pokazuje aktivnost značajniju od vitamina C
- A1 boja može se smatrati potencijalnim antioksidansom