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Komparativna studija antioksidativne aktivnosti boja i obojene tkanine: 5-(4-supstituisani fenilazo)-3-piridinijum-6-hidroksi-4-metil-2-piridoni

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U ovom radu prikazane su sinteza i primena dve azo boje na bazi 6-hidroksi-4-metil-3-piridinijum-2-piridona. Supstituisani piridon dobijen je Guaresi-Torpeovom reakcijom kondenzacije, dok su azo boje sintetisane klasičnim postupkom diazo kuplovanja pri čemu su korišćena dva različito p-supstituisana anilina. Primenom FTIR, ¹H i ¹³C NMR, UV-Vis i masene spektroskopije dobijena jedinjenja su okarakterisana. U zavisnosti od rastvarača i supstituenta, boje se nalaze u ravnoteži dva tautomerna oblika, hidrazonskog i cviterjonskog, za razliku od literaturnih analoga u kojima se navodi hidrazon-azo anjon ravnoteža. Specifična struktura dobijenih boja omogućava bolju rastvorljivost, pre svega u vodi. Primena se sastoji u bojenju vune pri ranije optimizovanim uslovima bojenja. U ovom radu na osnovu predloženog mehanizma vidi se da, pored očekivanih vodoničnih veza, jon-jon interakcije učestvuju u vezivanju boje za tkaninu. Komparativna studija antioksidativne aktivnosti boja i obojenih tkanina urađena je pomoću ABTS metode.

Comparative study of the antioxidant activity of dyes vs. dyestuff: 5-(4-substituted phenylazo)-3-pyridinium-6-hydroxy-4-methyl-2-pyridones

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Herein, we report the synthesis and application of two azo dyes based on 6-hydroxy-4-methyl-3-pyridinium-2-pyridone. The substituted pyridone was synthesized via Guareschi-Thorpe condensation, wherein dyes are obtained by the classical reaction of diazo coupling by using two diversely p-substituted anilines. The characterization of the synthesized compounds was carried out by FTIR, ¹H and ¹³C NMR, UV-Vis and mass spectroscopy. These compounds exist in an equilibrium of two tautomeric forms in solution depending on the solvent as well as on the substituent and are water-soluble. It is worth mentioning that the hydrazone form of the dyes is in equilibrium with the zwitterion form of the dyes unlike the literature analogs existing in the anionic form. The application of the dyes consists of dyeing wool fiber at optimized conditions. The dyeing mechanism is suggested, wherein it revealed that these like dyes utilize ion-ion interactions next to expected hydrogen bonds. A comparative study on the antioxidant activity of the dyes and the dyestuff was conducted using ABTS assay.

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