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SYNTHESIS AND ELECTROCHEMICAL STUDIES OF SOME INDOLIZINE DERIVATIVES

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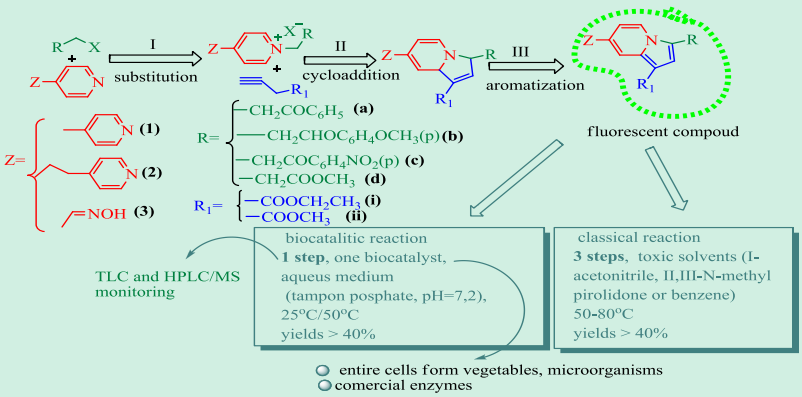
Interests for indolizine compounds

➢High photoluminiscent properties → **Luminophores compounds** → Potentiel fluorescents markers; Potentiel laser "scintilators"

Study's aims

- Study on the *synthesis, UV/Vis and electrochemical properties* of a series of heterocyclic indolizines derived from the pyridine, 4,4'-bipyridyl newly and previously synthesized by us.
- Study of the influence of external (solvents) and internal (substitutes, structure of starting N-heterocycles) factors on the electrochemical properties of the bis-indolizine compounds.

Synthesis of indolizine compounds



➢*One -pot* cycloaddition reaction of dipolarophyle compound (ethyl propiolate) with a stable ylide prepared *in situ* from pyridinium starting materials and ω–brom-acetophenone.

➢The reaction was performed at room temperature in aqueous tampon solution (pH 7.2) and in the presence of biocatalysts: pure HRP, crude enzimatic extracts

➢Pyridinium compounds, as starting material , phosphate bufferpH 7.2, w-bromacetophenone biocatalyst and ethyl propiolate mixed at room temperature on orbital shaker

➢ extraction with chloroform

➢Reaction's evolution monitored through TLC and HPLC

➢ Reaction's yields quantified by HPLC methods

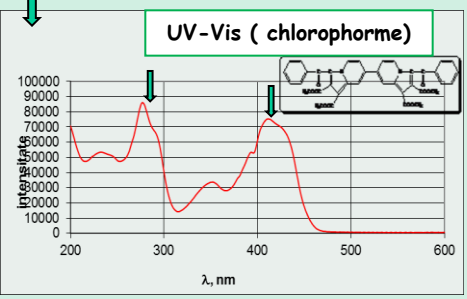
➢Indolizinic structures and purity were characterized by NMR, IR and mass spectroscopy **Le avem?**

Study of electrochemical properties of indolizine compounds

❖ Recording absorption spectra of some mono- and bis-indolizines derivatives, in solvents with different polarities: water, ethylacetate, ethanol 95%, dimethylformamide, acetonitrile, acetone, chlorophorme;

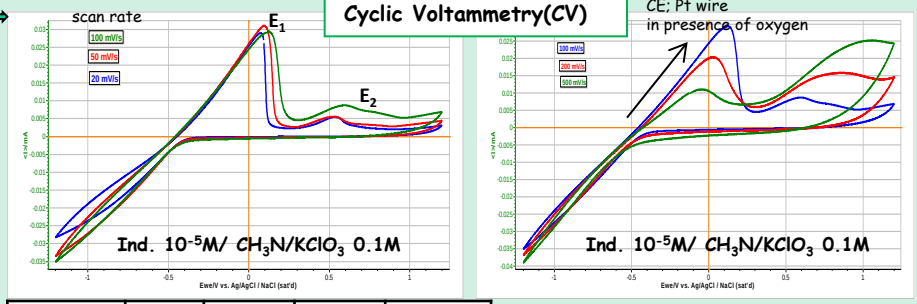
❖ **Experimental conditions:** 25°C; *solution's concentrations*: 1.06-1.39x10^{-5}M for **2a-c(i, ii)** and **3a(i)** compounds, 1.10-1.18x10^{-6}M for **1a(i)** and **2d(i, ii)** compounds, *absorbtion spectra*: between 200-600 nm.

Denumire: → **M 588**



Cyclic Voltammetry(CV)

WE: glassy carbon (**Bio-logic SP150**)
CE: Pt wire
in presence of oxygen



Scan rate (mV/s)	E_1(V)	E_2(V)	I_1 (mA)	I_2(mA)
100	0.132	0.588	0.029	0.0086
50	0.099	0.536	0.032	0.0081
20	0.080	0.536	0.028	0.0081

Indolizines have shown evidences of an oxidation process without a corresponding reduction reduction peak as result of dimerization reaction suggestion?

Conclusions

➢ Design of an efficient synthesis method for new fluorescent indolizine compounds

➢A higher purity degree for indolizine compounds was obtained with the pure HRP catalysed reaction.

➢The yield obtained for biocatalysed reactions is heavily influenced by crude enzyme extract biocatalyst ; a more efficient extraction technique is currently under investigation.

Acknowledgements

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