Synthesis of 2-aminopyridine lactones and studies of their antioxidant, antibacterial and antifungal properties.

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Synthesis and biological activities of substituted 2-aminopyridine δ-lactone derivatives

[Chemical structures and reactions]

2-aminopyridine lactones

5a 5b 5c 5d 5e 5f
Antioxidant effects

- Screening of antioxidant activity DPPH on TLC was employed
- Spectroscopic measurements were made through DPPH assay.
- The antioxidant proprieties were measured and evidenced in terms of their efficient concentration IC$_{50}$, as well as their reduction kinetics.

- Evaluation of the antioxydant activity by the test of DPPH, revealed a great antioxydant capacity for the most of compounds tested with a variation of IC$_{50}$ between 1.30-3.61 mg/ml and times of reaction of 30 minutes.
Antifungal and antibacterial activities

The antibacterial activity of the compounds was determined by the disc diffusion method against clinical Gram-negative bacteria: *Escherichia coli, Pseudomonas aeruginosa* and Gram-positive bacteria: *Staphylococcus aureus, Listeria monocytogenes* and *Bacillus cereus*.

The antifungal activity of the compounds was determined by using a direct-contact and agar diffusion test against clinical fungi *Aspergillus flavus* and *Aspergillus ochraceus*

The compounds showed moderate to very good antibacterial and antifungal activities, that the 5b, 5d, 5e and 5f presents a best minimal inhibitory concentration (MIC) with 62.5 µg/ml. The *Aspergillus ochraceus* strain revealed a stronger sensitivity than *Aspergillus flavus* to all compounds tested, While that the 7c and 7b showed a broad-spectrum antifungal activity again pathogenic *Aspergillus ochraceus* with an inhibition percentage of 77% and 78%, respectively.

Based our results, the compounds of 2-aminopyridines and bis-2-aminopyridines can be considered as a source of novel antibiotic and antifungal.