TITLE: SYNTHESIS OF 5-NITRO-THIOPHENE THIOSEMICARBAZONES DERIVATIVES AND ITS ANTIFUNGAL ACTIVITY AGAINST PATHOGENIC YEASTS

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ABSTRACT: Evolution of bacterial and fungal drug resistance is a great challenge, and the indiscriminate use of available antimicrobials increase this effect, affecting the efficiency of these drugs. In addition, these drugs, sometimes, is toxic. In this scenario, *Candida* sp. and *Cryptococcus* sp. shows itself as important fungal infections with global distribution, especially affecting the immunodeficient patient. Thiosemicarbazones (TSC) has been highlighted in the medicinal chemistry field owned its great chemical versatility and promising biological applications, associated with its important pharmacological potential, among which is already reported: antiproliferative, antiparasitic, antioxidant and antimicrobial activity. Nitro-Aromatic compounds is important pharmacophores too report in literature as great antiparasitic, antibacterial, antituberculotic, antiviral, antitumor, antiplatelet and antifungal potential. In this work, we aimed to synthesize 12 2-(5-nitro-thiophene)-thiosemicarbazones replaced (**LNN** series). The synthesis was performed in two steps: reacting hydrazine with isothiocyanates forming semicarbazides, that reacted with 5 nitro thiophenes 2 carboxaldehyde in order to create the final compounds. The compounds were obtained in satisfactory yield (50-94%), and its structures were elucidated by nuclear magnetic resonance, infrared and mass spectrometry. Antifungigram was performed by broth microdilution method described by CLSI/2002 standard M27 A2. **LNN-10** presented activity against *Candida parapsilosis* URM 7048 (2,0 µg/mL) *Cryptococcus neoformans* URM 6898 (0,06 µg/mL), with activity values inferior to toxic concentration. These results indicate that 2 (5 nitro thiophene) thiosemicarbazones is a potential antifungal agent, and, could be used as therapeutic options in the fungal diseases in the future.

Keywords: Thiosemicarbazons. Thyophen. Antifungal activity.

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