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SYNTHESIS OF SOME HETEROCYCLIC COMPOUNDS DERIVATIVES BY USING MELDRUM'S ACID AS STARTING MATERIAL AND STUDY OF THE BIOLOGICAL ACTIVITIES

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ABSTRACT : This paper involves synthesized of some heterocyclic compounds derivatives by using Meldrum's Acid as starting material by Multicomponent reaction of Meldrum's Acid, salisaldehyde and indol, Meldrum acid derivative, which further to synthesis Schiff base derivative after that Schiff base using to prepare of four, five, seven membered ring by reacted with different materials. Their structures were identified by (FT-IR, ^{1}HNMR, ^{1}CNMR). The synthetic compounds were screened *in vitro* antimicrobial for biological activity.

Key words : Meldrum's Acid, shiff base, β-Lactam, oxazepine, oxazepane, imidazolidine, biological activity.

INTRODUCTION

Multicomponent reactions have been used as a specific synthetic method for the preparation of molecules from facilitate starting materials via a single pathway (Fabriciof *et al*, 2017). Multicomponent reactions are defined as reaction include, where more than two starting materials react to produce a novel molecules and very approach across the synthesis of structurally different molecular existences (Bahadork and Saeed, 2012; Andras *et al*, 2016), multicomponent reactions have been resolved to produce biological active compounds (Zarganes-Tzitzikas *et al*, 2011). Meldrum,s acid is an active methylene compound with static cycle structure and afford hydrolysis very effortless (Hanaan *et al*, 2017), Meldrum's acid can submit knoevenagel condensation (Ren *et al*, 2002; Aimini *et al*, 2003). Meldrum's acid has made this a multilateral reagent in organic synthesis, particularly those instituted on the multicomponent process (Dumas and Fillion, 2010; Lipson and Goroobets, 2009; IVanov, 2008), Meldrum's acid important in the synthesis of type intermediates for the synthesis of heterocyclic compound with pharmacological activities (Vijay *et al*, 2014).

MATERIALS AND METHODS

All chemicals compounds have high purity as supplied by BDH and Fluka company. Melting point of the compounds recorded by electro thermal 9300, melting point engineering LTD, All measurements synthesis compounds were recorded by FTIR spectra, fourier transform infrared shimadzu (8400), H^{1}NMR and C^{1}NMR–spectra in (ppm) in DMSO solvent by Bruker – AVANCE AQS-300MH$_z$, Iran. Thin layer chromatography used silica gel in Benzene :methanol solvent.

Experimental

Synthesis of the compound (S)

The compound (S) was prepared by reaction of indol (1.17gm.0.01 mol) in CH_3CN (10)ml, Meldrum's acid (Meldrum, 1908) (1.14 gm, 0.01ml), 2-hydroxy benzaldehyde (1.22gm, 0.01mol) and L-proline (0.06gm, 0.0005mol). The solution mixture was stirred at 25-30^{0}C for 45 hours. The product was recrystallized from absolute methanol or ethanol.

General procedure for synthesis of ester derivative of compound (S_1)

Mixture of the Meldrum's acid derivative (1 equiv) and copper (0.2 equiv) was dissolved using a mixture of (10:1) pyridine \ethanol (0.1m) solution (Oikawa *et al*, 1978). The mixture was refluxed to 100^{0}C for 3 hours. Removal of the (cu) powder the product was recrystallized from ethyl acetate\ n-hexane.

General procedure for synthesis of hydrazide (Aakash and Sandeep, 2010) derivative of compound (S_2)

The ester of compound derivative (S_1) (1 gm, 0.01mol) reacted with hydrazine hydrate (0.5 gm, 0.01mol) in absolute ethanol. The mixture was heated under refluxed to 78^{0}C for 21 hours, the product