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SYNTHESIS OF PYRAZOLINE AND ITS AMINO ACID DERIVATIVES

Vinayak Bhimrao Suradkar*, Vibha Ninad Saoji and Shahrukh Khan Tauqeer Khan

Department of Chemistry Vidnyan Mahavidyalaya, Malkapur – 443101, Dist, Buldana (M.S.) INDIA.

***Author for Correspondence: Vinayak Bhimrao Suradkar**
Department of Chemistry Vidnyan Mahavidyalaya, Malkapur – 443101, Dist, Buldana (M.S.) INDIA.

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ABSTRACT
Pyrazolines are five member heterocyclic compounds having nitrogen atom is the part of ring. The isoxazoline possess wide applications in pharmacology and medicinal chemistry. This study based on the synthesis of pyrazoline via dibenzal acetone (chalcone) and its glycene and arginine derivatives. The synthesized compounds were confirmed by melting point and IR spectral analysis.

KEYWORDS: Pyrazoline, Dibenzalacetone, Glycene, Arginine.

INTRODUCTION

Nitrogen heterocyclic compounds like pyrazolines have received considerable attention due to their biological and physiological activities.[1] Pyrazolines are the five membered nitrogen containing heterocyclic compounds. Pyrazolines possess some biological activities such as anaesthetic, anti-diabetic, analgesic, anti-inflammatory, antitumor, anticonvulsant, antidepressant and antimicrobial.[2,3] Most of the pyrazolines synthesized from chalcones. The chalcones are found to be active with extensive pharmaceutical and medicinal applications[4].Chalcones have been reported to possess anti-oxidant, anti-ulcer, anti-malarial, anti-inflammatory, antitumor, anti-tubercular, antibacterial activity and antifungal activities.[5,6]

Amino acid derivatives of heterocyclic compounds are an important group having variety of applications in medicinal Chemistry.[7] Glycene and arginine amino acids are biologically active constituents which are widely used in the synthesis of various organic compounds.

METHODS AND MATERIALS

All the melting points were determined by Thiel's tube method. The structures of the compounds were characterized by IR spectra.

Preparation of pyrazoline (I)

A mixture of dibenzalacetone (10mmol) and hydrazine hydrate (10mmol) in ethanol(10ml) was reflux at room temperature for 24 hrs. The resulting mixture poured into crushed ice.

The solid product that separated out was collected by filtration, washed with ethanol & dried. It was recrystallized from ethanol to yield pyrazoline.

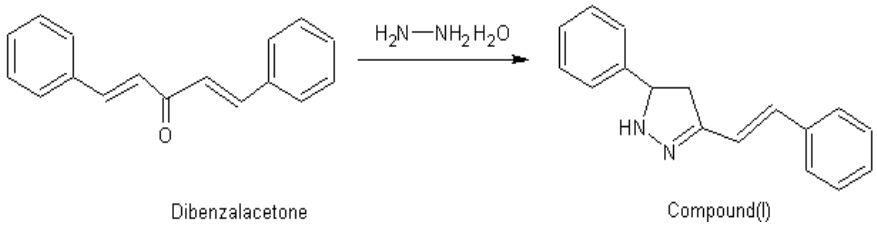
Preparation of 5-phenyl-3-[-2- Phynylvinyl]-4,5dihydro-1H-pyrazoline glycenate(II).

A mixture of pyrazoline(I) (3mmol) and glycene (3mmol) in ethanol(10ml) was stirred at room temperature for 1hr. The crude solid product was washed with ethanol & dried. It was recrystallized from ethanol.

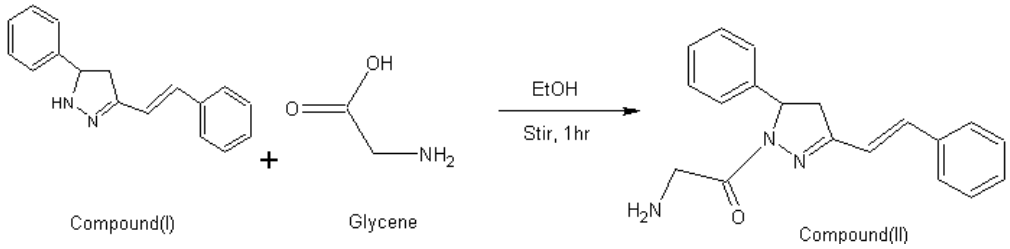
Preparation of 5-phenyl-3-[-2-Phynylvinyl]-4,5dihydro-1H-pyrazoline arginate(III).

A mixture of pyrazoline(I) (3mmol) and arginine (3mmol) in ethanol(10ml) was stirred at room temperature for 1hr. The crude solid product was washed with ethanol & dried. It was recrystallized from ethanol.

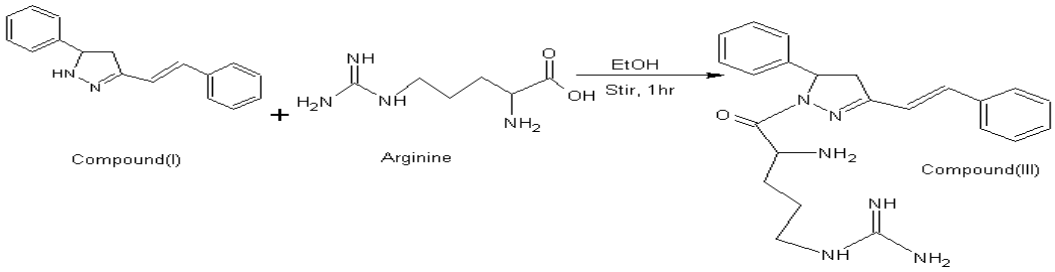
Scheme-I



Scheme-II



Scheme-III



RESULT AND DISCUSSION

The melting points of synthesized compounds were determined by Thiels tube method. The M.P. of all compounds were sharp. The yield of the compounds also satisfactory. The compounds I, II and III were confirmed by IR spectral analysis.

IR(KBr): The peak at 3059 cm^{-1} and 3028 cm^{-1} indicates towards the presence of secondary –NH group. The peak at 1724 cm^{-1} (C=N stretching), 1494cm^{-1} (C=C Stretching), 3028cm^{-1}(Aromatic-CH-Stretching), 2893 cm^{-1}(aliphatic-CH Stretching), 756, 812 and 864 cm^{-1}(Aromatic -C-H Bending).

M.P.-90^{o}C.

IR(KBr): The peak at 3059.10 cm^{-1} indicates towards the presence of $–NH_2$ group. The peak at 1647 cm^{-1} (C=N stretching), 1492cm^{-1} (C=C Stretching), 1712 cm^{-1} (C=O stretching), 3026cm^{-1}(Aromatic-CH-Stretching), 2891 cm^{-1}(aliphatic-CH Stretching), 758,802 and 869cm^{-1}(Aromatic -C-H Bending).

M.P.-110^{o}C.

IR (KBr): The peak at 3059 and 3028 cm^{-1} indicates towards the presence of –NH group. The peak at 1631 cm^{-1} (C=N stretching), 1600cm^{-1} (C=C Stretching), 1710 cm^{-1} (C=O stretching), 3028cm^{-1}(Aromatic-C-H-Stretching), 2899 cm^{-1}(aliphatic-CH Stretching), 758,796,848 and 875cm^{-1}(Aromatic -C-H Bending).

M.P.-104^{o}C.

CONCLUSION

The present study conclude that the synthesized glycene and arginine derivatives of pyrazoline shown different physical and spectral properties. The synthesized compounds may show some biological activities. Therefore in the further study these compounds should analyzed for their biological activities.

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