



BIOLOGICAL ACTIVITIES OF SOME PYRAZOLINE DERIVATIVES

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ABSTRACT

The review of the literature shows that the pyrazoline derivatives is quite stable and has inspired chemists, to utilize pyrazoline fragment in bioactive moieties, to synthesize new pyrazoline derivatives. The past studies of pyrazoline derivative revealed that they are useful in pharmaceutical and agrochemical research. Pyrazoline derivatives display various biological activities such as antitumor, antitubercular, antimicrobial, antibacterial, anti-inflammatory and antioxidant etc.

KEY WORDS: pyrazolines, antitumor activity, microbial activity, anti-inflammatory activity.



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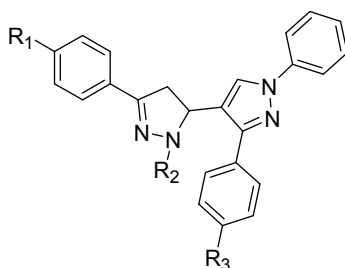
INTRODUCTION

The study of biological evaluation of pyrazoline derivatives has been an interesting field of medicinal chemistry. The synthesis of pyrazoline derivatives and investigation of their chemical and biological behavior has gained more importance in recent decades for biological and pharmaceutical reasons. The synthesis of pyrazole derivatives has been well explored using the so-called [3+2] atom fragments, where

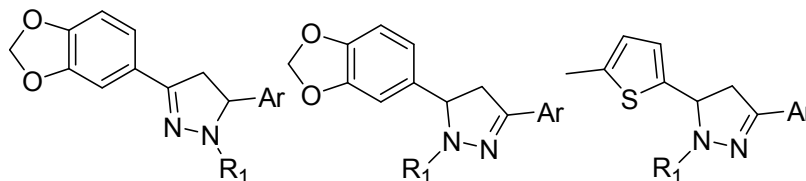
β -diketones or α,β -unsaturated ketones are used as the 3-atom building block and hydrazines as the 2-atom fragment. Pyrazolines are a five-membered heterocyclic having two adjacent nitrogen atoms within the ring with only one endocyclic double bond and is basic in nature. Pyrazolines exhibit biological activities such as anti-inflammatory, antimicrobial, antitumor, antitubercular etc.

I. ANTITUMOR ACTIVITY

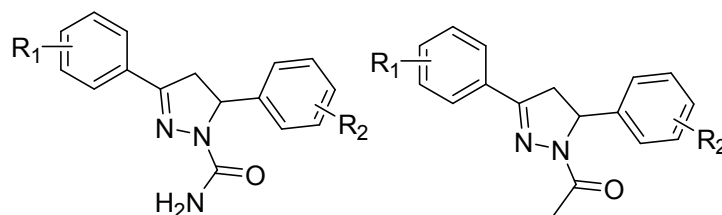
a) Braulio Insuasty *et al.*¹ synthesized a series of novel 3-aryl-4-(3-aryl-4,5-dihydro-1H-pyrazol-5-yl)-1-phenyl-1H-pyrazoles and screened their antitumor activity.



b) Braulio Insuasty *et al.*² synthesized a series of 1-substituted 3-aryl-5-aryl(hetaryl)-2-pyrazolines and study of their antitumor activity.

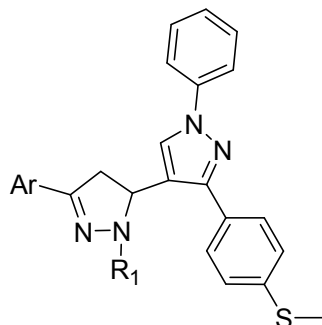


c) Hai-Liang Zhu *et al.*³ Synthesized a series of 3-(substituted phenyl)-5-(substituted phenyl)-4,5-dihydro-1H-pyrazole-1-carbothioamide and 1-(5-(substituted phenyl)-3-(substituted phenyl)-4,5-dihydro-1H-pyrazol-1-yl)ethanone as anticancer agents.

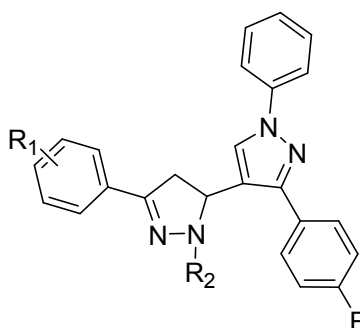


II. ANTITUBERCULARACTIVITY

a) H. S. Joshi *et al.*⁴ Synthesized a series of 1-acetyl-3,5-diphenyl-4,5-dihydro-(1H)-pyrazole derivatives and evaluation of their antitubercular activity.

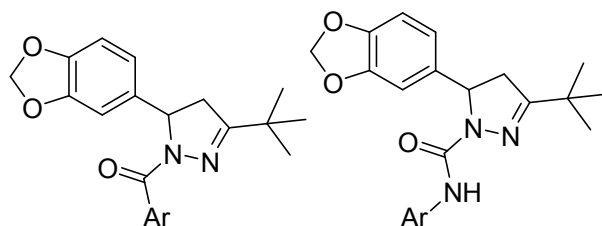


b) E.C. Coutinho *et al.*⁵ Synthesized a series of N-phenyl-3-(4-fluorophenyl)-4-substituted pyrazole derivatives and screened for their antitubercular activity.



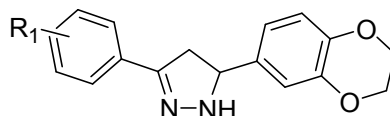
III) ANTICONVULSANT ACTIVITY

a) Mohamed N. Aboul-Enein *et al.*⁶ synthesized of novel stiripentol analogues and evaluation of potential anticonvulsant activity.



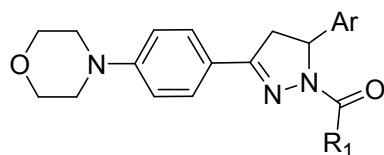
IV) ANTIHEPATOTOXIC ACTIVITY

a) Habibullah Khalilullah *et al.*⁷ Synthesized 5-(2,3-dihydro-1,4-benzodioxane-6-yl)-3-substituted phenyl-4,5-dihydro-1H-pyrazole derivatives and their antihepatotoxic activity.



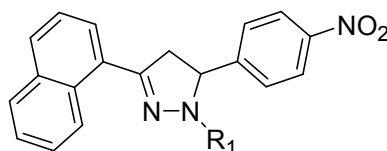
V) ANTI-INFLAMMATORY ACTIVITY

a) Omneya M. Khalil⁸ Synthesized 1-acetyl/propanoyl-5-aryl-3-(4-morpholinophenyl)-4,5-dihydro-1H-pyrazole derivatives and evaluation of their anti-inflammatory activity.



VI) ANTIMICROBIAL ACTIVITY

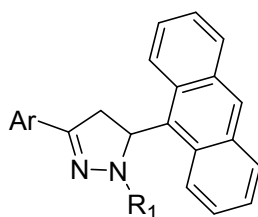
a) Manish Agrawal *et al.*⁹ Synthesized of 1,3,5-trisubstituted pyrazoline derivatives and screening for their antimicrobial activity.



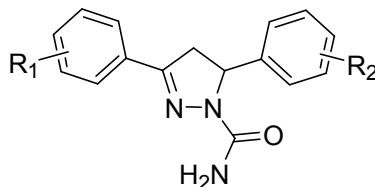
b) Helio G. Bonacorso *et al.*¹⁰ Synthesized new trifluoromethyl containing (*E*)-*N'*-arylidene-[3-alkyl(aryl/heteroaryl)-4,5-dihydro-1*H*-pyrazol-1-yl]carbohydrazides and evaluation of their antimicrobial activity.



c) Seham Y. Hassan¹¹ Synthesized New Pyrazoline derivatives and evaluation of their antimicrobial activity.

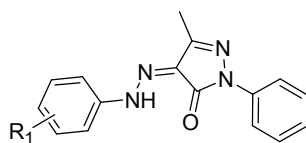


d) Alka Chauhan¹² Synthesized novel pyrazole analogues as efficacious antimicrobial agents.

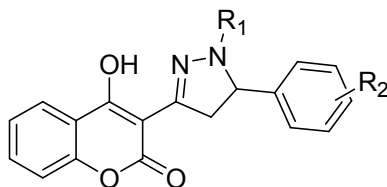


VII) ANTIBACTERIAL ACTIVITY

a) Yuvaraj S *et al.*¹³ Synthesized some pyrazole derivative and evaluation of their antibacterial activity.

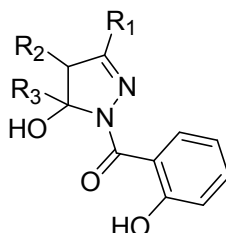


b) Abdullah Sulaiman Al-Ayed ¹⁴ Synthesized of new 3-(5-aryl-4,5-dihydro-1H-pyrazol-3-yl)-4-hydroxy-2H-chromene-2-one derivatives and evaluation of their antibacterial activity.



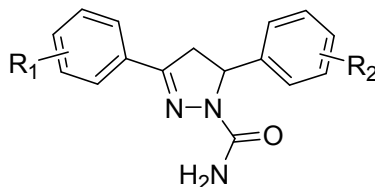
VIII) ANALGESIC AGENTS

a) Marcos A. P. Martins *et al.*¹⁵ Synthesized of novel 4,5-dihydro-1H-pyrazole derivatives as analgesic agents.



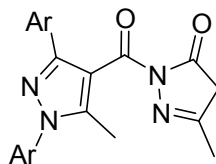
IX) ANTICONVULSANT ACTIVITY

a) Singh Vinayaditya *et al.*¹⁶ Synthesized of pyrazoline derivatives and biological evaluation of anticonvulsant activity.



X) ANTIOXIDANT ACTIVITY

a) K. B. Umesha *et al.*¹⁷ Synthesized of 5-methyl-2-(5-methyl-1,3-diphenyl-1H-pyrazole-4-carbonyl)-2,4-dihydro-pyrazol-3-one and evaluation of their antioxidant activity.



CONCLUSION

In conclusion, we have described the pyrazoline derivatives biological activities such antitumor, antitubercular, antimicrobial, antibacterial, anti-inflammatory and antioxidant etc.

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