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REVIEW ARTICLE

Importance of Oxadiazole Containing Compounds

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ABSTRACT

Oxadiazole are the heterocyclic compounds containing nitrogen and oxygen that act as an important pharmacophore for the development of various new drug with potent pharmacological activity. The oxadiazole containing compounds exhibit diverse biological actions such as virucidal, CNS depressant, genotoxic, anticonvulsant, insecticidal, antitubercular, anti-HIV, herbicidal, diuretic, sedative and hypnotic properties. In this article the pharmacological activities of various oxadiazole containing compounds are described.

Keywords: Oxadiazole, pharmacological activity, heterocyclic compounds.

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1. Introduction

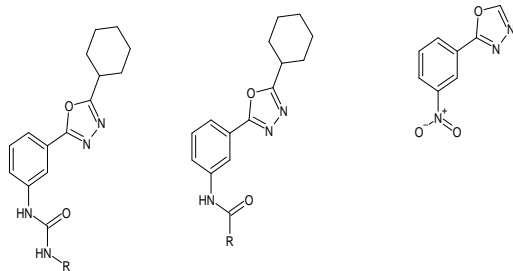
Oxadiazoles and their derivatives can be considered as simple five membered heterocycles possessing one oxygen and two nitrogen atoms. the oxadiazoles exist in different isomeric forms. The five member heterocyclic compounds, particularly nitrogen and oxygen heterocycles oxadiazole have been successfully tested against several diseases and therefore received special attention in pharmaceutical chemistry due to their medicinal potential. Among the

oxadiazoles; 1,2,4-oxadiazoles continuously draws interest for devolpment of newer drug moiety. Substituted 1,3,4-oxadiazole derivatives have demonstrated a broad spectrum of biological properties in both pharmaceutical and agrochemical fields. they have known to exhibit divers biological such as Virucidal, CNS depressant, Genotoxic, Anticonvulsant, Insecticidal, Anti Tubercular, Anti HIV, Herbicidal, Anti-Inflammatory, Antimicrobial activities.

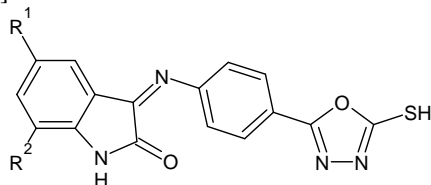
2. Activities of Oxadiazole compounds

Anticancer Activity:

Kavitha selvaraj et al synthesized a series of 3-(5-cyclohexyl)-1,3,4 oxadiazole-2-yl)-N-substituted aniline and screened for their anticancer activity[2].



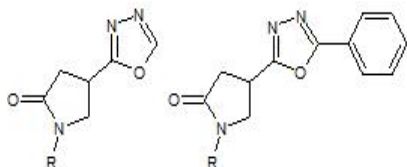
Sarangapandi manda et al synthesized a series of 5 or 7 substituted 3-(4-(5-mercapto-1,3,4-oxadiazole-2-yl) phenyl imino)-indolin-2-one derivatives evaluated for anticancer activity[3].



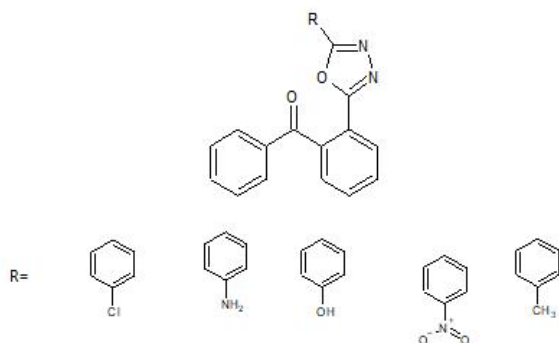
R1=H,F,Cl,Br,CH₃,NO₂,COOH,R2=H,Cl,NO₂,CH₃,COOH,COOCH₃

Antimicrobial Activity:

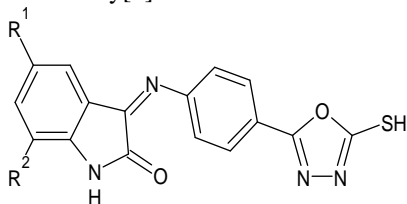
V.mickevicius et al synthesized substituted 1,3,4 oxadiazole derivatives and screened for antimicrobial activity[11].



Suman bala et al synthesized 1,3,4-oxadiazole derivatives screened for Antimicrobial potential activity.



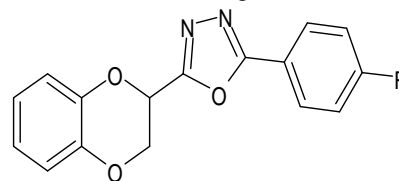
Vishal Modi et al synthesized anovel achiral and chiral amides incorporating 1,3,4-oxadiazole ring and screened for anti-microbial activity[4].



R1=CnH_{2n+1}, n=4, 5, 6, 7, 8, 10,

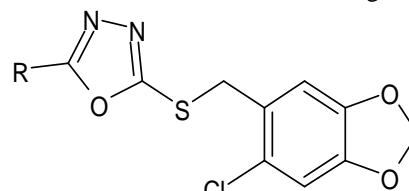
R2=C₁₄H₂₉

Habibullah khalilullah et al synthesized a series of 1,3,4 oxadiazole containing 1,4-benzodioxane ring system and evaluated antibacterial &anti-fungal activities[5].



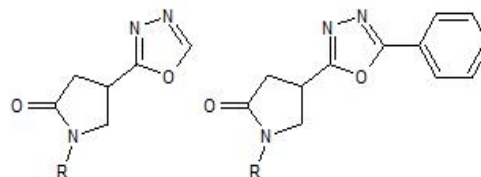
R=H,2-Br,3-Br,3-Cl,4-Cl,2-CH₃,4-CH₃,4-NH₂

Aziz-ur-Rehman et al synthesized some new 5-substituted-2-((6-chloro-3,4-methylene dioxypheyl)methyl thio-1,3,4-oxadiazole derivatives for bacterial inhibiting activity[1].



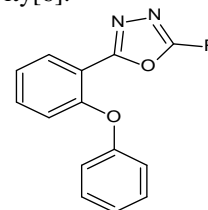
R=C₆H₅,C₆H₄CH₃

V.mickevicius et al synthesized substituted 1,3,4-oxadiazole derivatives and screened for antimicrobial, herbicidal activity[11].



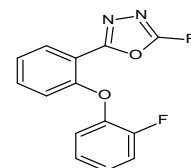
Anticonvulsant Activity:

Sayyed abbas tabatabai et al prepared 2-(2-phenoxy)phenyl-1,3,4-oxadiazole derivatives screened for anticonvulsant activity[6].



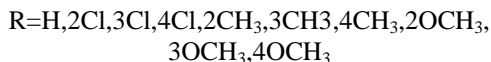
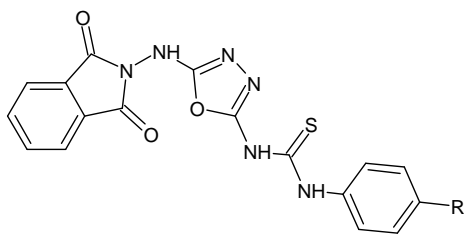
R=H,OH,NH₂,SH,SCH₃

Abbas shafiee et al synthesized new 2-substituted-5-(2-(2-fluorophenoxy) phenyl)-1, 3, 4-oxadiazoles and 1,2,4-triazoles screened for anticonvulsant activity[8].

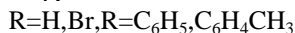
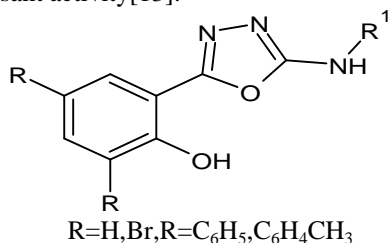


R= NH₂, SH, SCH₃, OH

Mashooq A.Bhat et al synthesized some novel 1,3,4-oxadiazole derivatives of phthalimide and screened anticonvulsant activity[9].

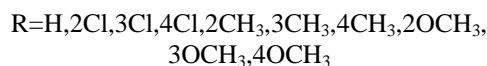
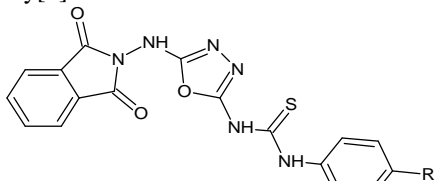


M.E.Omar et al synthesized novel series of 2 substituted amino-5-aryl 1,3,4-oxadiazole derivatives and screened for anti-convulsant activity[13].



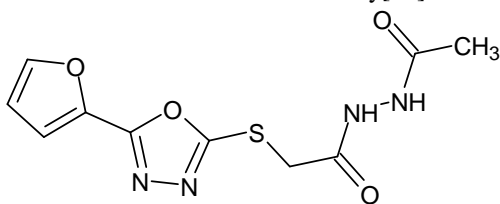
Neurotoxicity:

Mashooq A.Bhat et al synthesized some novel 1,3,4-oxadiazole derivatives of phthalimide and screened neurotoxicity[9].



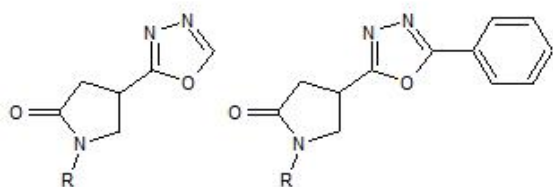
Anti-Tuberculosis Activity:

A.M.Comrie et al synthesized -(5-(2-furyl-1,3,4-oxadiazol-2-yl-thio)acetohydrazide and related compound and evaluated for anti-tuberculosis activity[12].

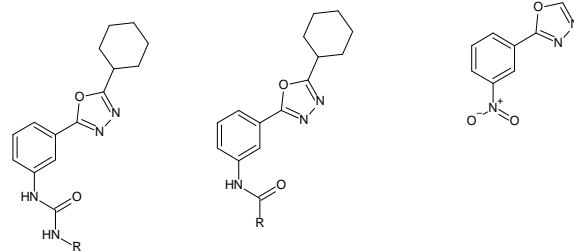


Anti-Inflammatory:

V.mickevicius et al synthesized substituted 1,3,4-oxadiazole derivatives and screened for anti-inflammatory activity[11].

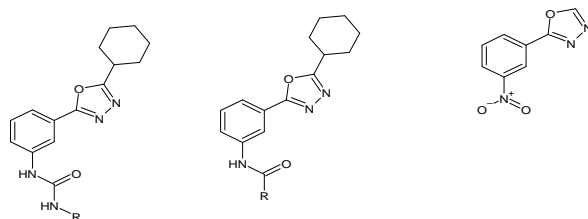


Kavitha selvaraj et al synthesized a series of 3-(5-cyclohexyl)-1,3,4 oxadiazole-2-yl)-N-substituted aniline and screened for anti-inflammatory activity[2].



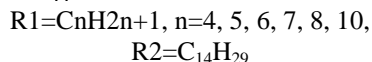
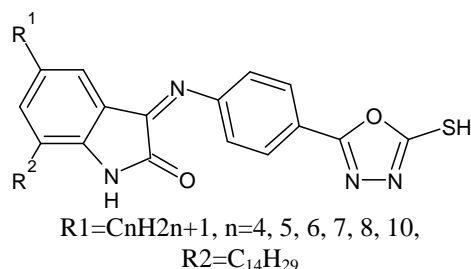
Antidiabetic Activity:

Kavitha selvaraj et al synthesized a series of 3-(5-cyclohexyl)-1,3,4 oxadiazole-2-yl)-N-substituted aniline and screened for their antidiabetic activity[2].



Cytotoxic Activity:

Vishal Modi et al synthesized novel achiral and chiral amides incorporating 1,3,4-oxadiazole ring and screened for cytotoxic activities[4].



3. Conclusion

The oxadiazole containing compounds exhibit diverse biological actions such as virucidal, CNS depressant, genotoxic, anticonvulsant, insecticidal, antitubercular, anti-HIV, herbicidal, diuretic, sedative and hypnotic properties.

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