Review of Quinoline Derivatives

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Abstract:

Quinoline compounds play an important role in designing new classes of structural entities of medicinal importance with potentially new mechanisms of action. The review article aims at highlighting these different diversities of the ring.

Keywords: Quinoline, Structure, Pharmacological Activity.

Background: Quinoline is nitrogen containing heterocyclic compound. Quinoline is used as lead compound in which benzene ring is fused with pyridine ring on 2-3 position. The heterocyclic ring is quinoline is a significant pharmacophore. Basic quinoline moiety well plays important role in novel new anticancer drugs development as their compound has good result through significant pharmacological activity such as growth inhibitors by cell cycle arrest [1].

Main Text:

Quinoline moiety is the present in different groups of pharmacological active comounds. The pharmacological activity of these quinoline derivatives depends not only on the bicyclic heteroaromatic pharmacophore but, also on the nature of the peripheral substituent and their spatial relationship [2].The basic quinoline skeleton is often used for the design of many synthetic derivative or compound with new versatile pharmacological properties and alteration in it shows numerous biological activities.Quinoline was first extracted from coal tar in 1834by *Friedlieb Ferdinand Runge*differnt quinoline compounds can be prepared by *Skraup Synthesis* using series of different oxidizing agents [3].

Benzaldehydes with 2-hydroxynapthalene-1,4-dione,cyclic beta-diketones and ammonium acetate has been widely used as an efficient procedure for synthesizing mixed nitrogen containing heterocycles. In added these compounds are used as ligands for the preparation of organic light emitting diode phosphorescent complexes and they are used in the preparation of nano- and meso- structures with enhanced electronic and photonic properties. Quinoline nucleus is often used for the design of many synthetic compounds with different pharmacological properties.In our work the anillation to amino that was converted into chanoactamide moiety and the latter was used to synthesize different heterocyclic derivatives comprising Thiophene,thiazole,pyridine,pyrimidine and coumarin rings that exhibite some interesting pharmacological activites.Further the mechanistic and synthetic pathways depends on cyclization by the cyanoacetamide moiety as the key precursor on different chemical resagents.The

simplicity of the synthetic procedures mainly involved reactions under mild conditions and convenience of yield production.The newly synthesized compounds were evaluated for their antimicrobial activity[4].

Quinoline are important group of heterocyclic derivatives due to their therapeutic importance. In past decades two the class have the studied for their antipyretic activity.Hence both are considered as milestone of the synthetic antipyretic nucleus.It was based on the observation of Guttman and Ehrlich made in 1891 that the dye methylene blue had some chemotherapeutic effect on malaria in patients.

These observations laid to the stone for new synthetic antimalarials. In 1920 the first synthetic antimalarials agent pamaquine was synthesized by *Schulemannetal*,which is 8-aminoquinoline derivatives. The quinoline moiety occurs in several natural compounds i.e. cinchona alkaloids and pharmacological active substances displaying a broad range of pharmacological activity.In addition to the medicinal application quinoline have been employed in the study of bio-organic metallic process. Inspired from these observation we planned to synthesize some fused with pyrazolone and quinoline derivatives [5].

The quinoline basic nucleus is a structural moiety that is found in many naturally occurring quinoline alkaloids. Tyrosine kinase (PDGE-RTK) inhibitor,DNA-intercalating carrier,analgesic,anti-HIV.anti-tumor,DNA binding capability and many other functional material. Quinoline has been present to posses antimalarials, antifugal,antibacterial, cardio tonic, anticonvulsant, anti-inflammatory, analgesic pharmacological screening.Quinoline compounds are most different used as a parent compound to make drugs(anti-malerial medicine), fungicides, alkaloids, dyes, rubber chemicals and flavoring agents. They have been antiseptic properties. Azaheterocycles with a quinoline fragment and oxo group are generating much attenationbecause,of their pharmacological properties such as antiasthmatic, anti-inflammatory, antimalarials, anticancer and anthelmintic pharmacological action. Indenoquinoline derivatives have a different range of pharmacological activityactivity such as 5-HT-receptor-binding and they also act as steroid reductase and acetyl cholinesterase inhibitors various methods have been therefore developed for the synthesis of substituted quinolines [6,7].

Review of literature and pharmacological activity:

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Figure:

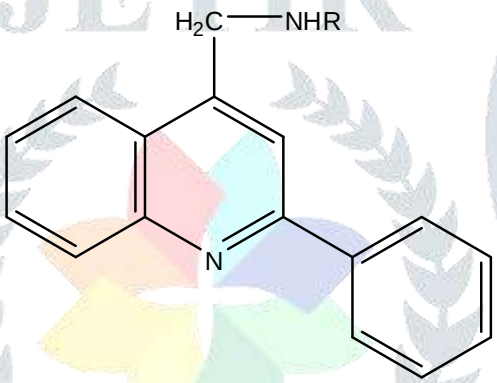
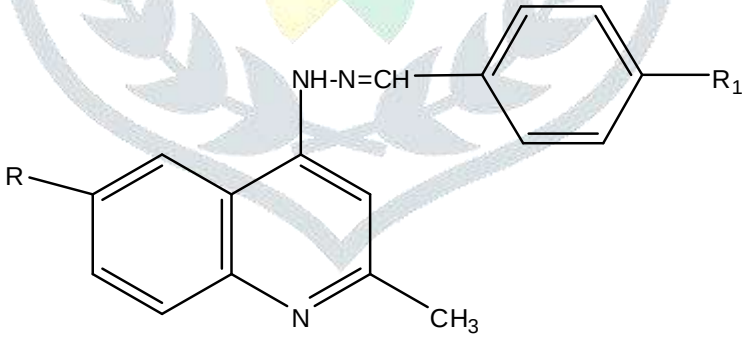
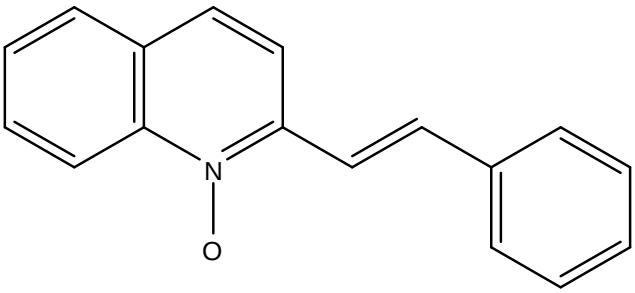


Figure:01



2,6-Disubstituted 4-quinolinyl hydrazino bezzylidine
Figure:02



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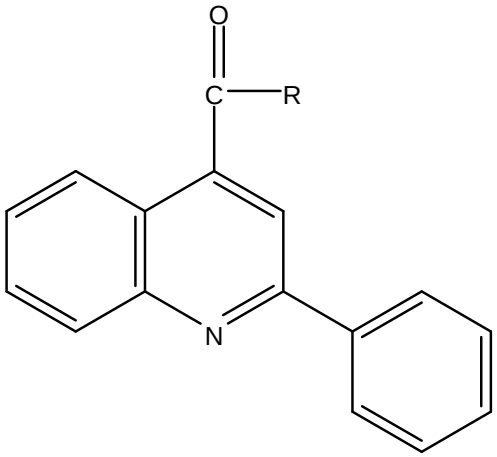

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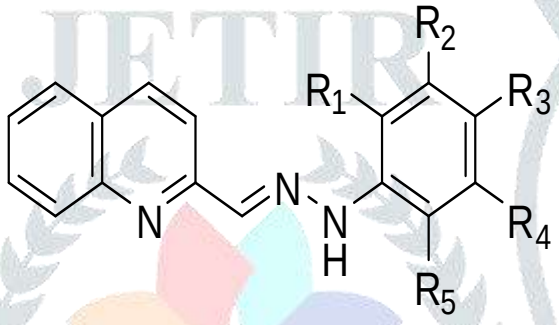

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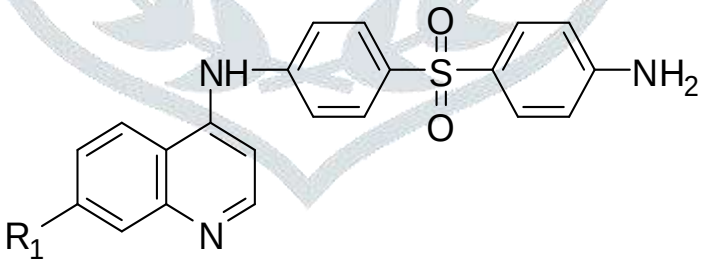

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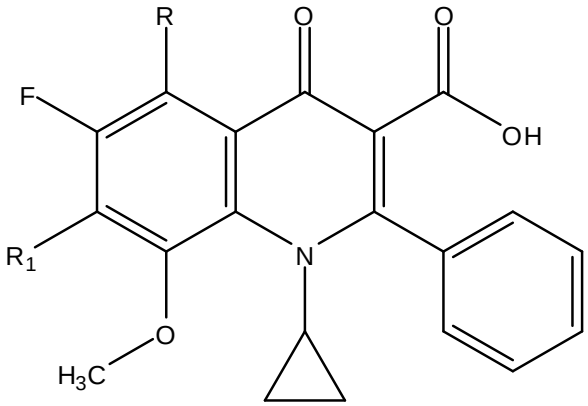

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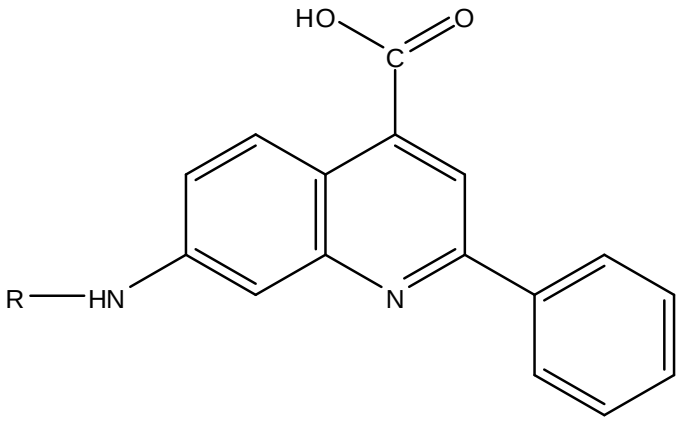

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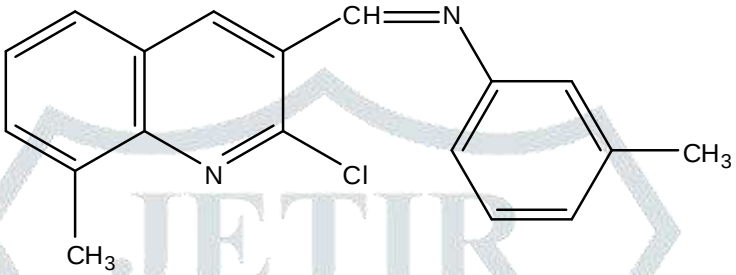
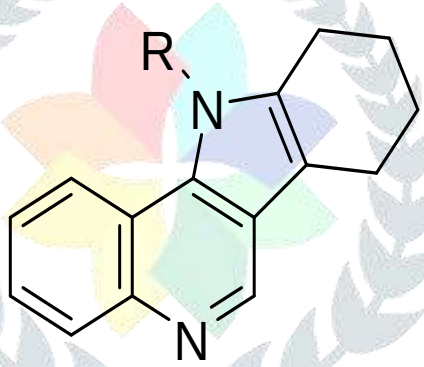


2-Chloro-3-(3'-methyl benzylidene)-8-methyl Quinoline

Figure:09



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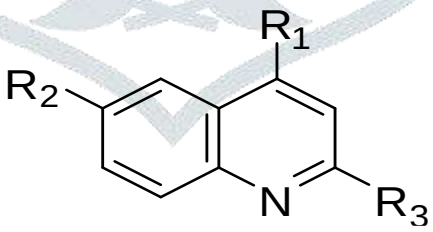

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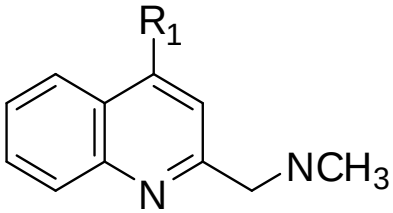

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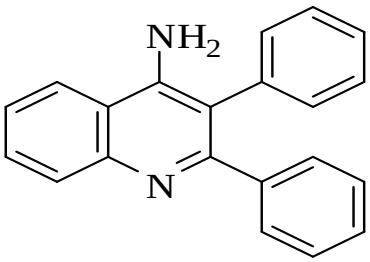

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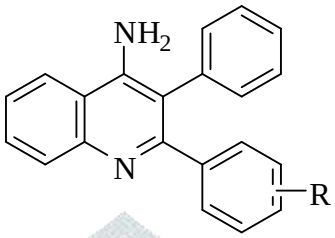

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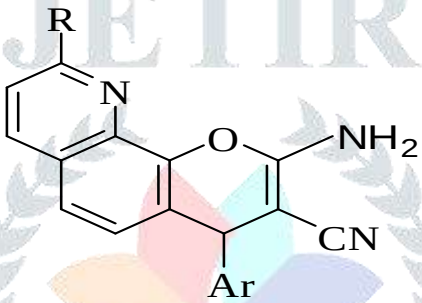

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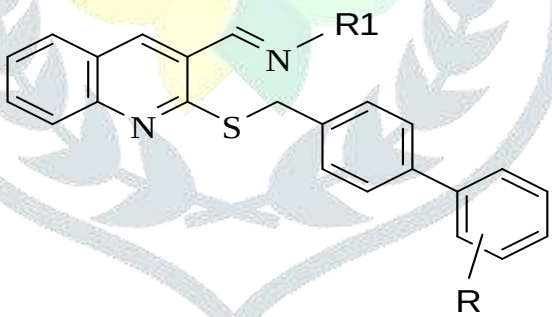

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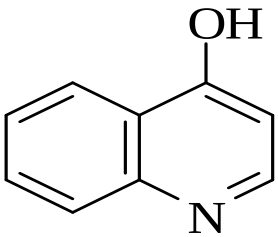

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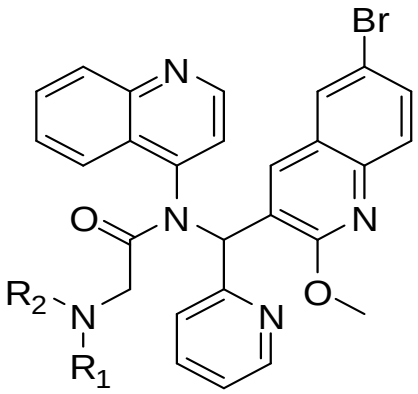

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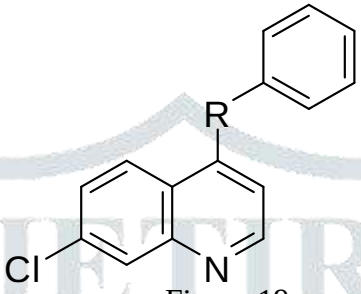

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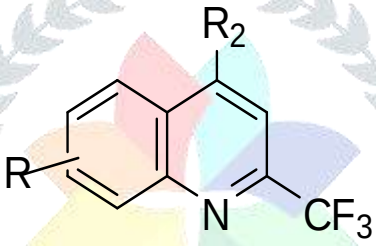

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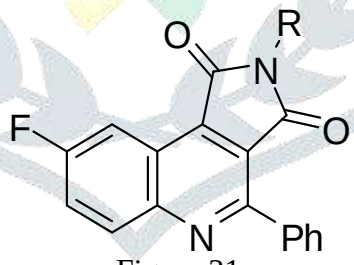

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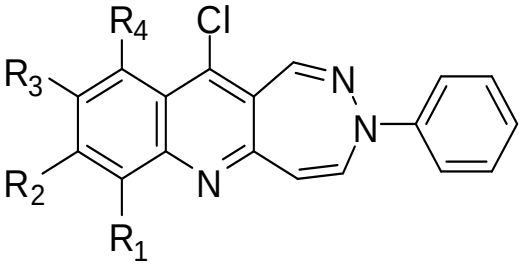

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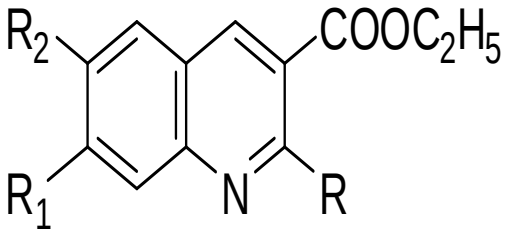

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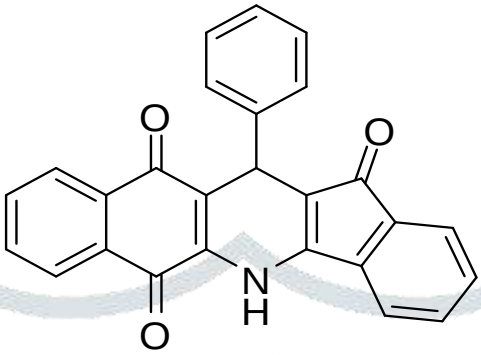

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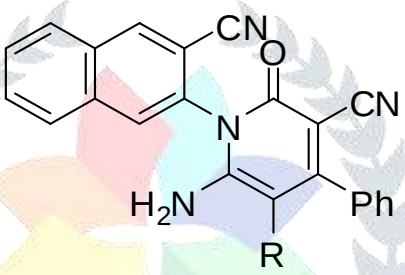

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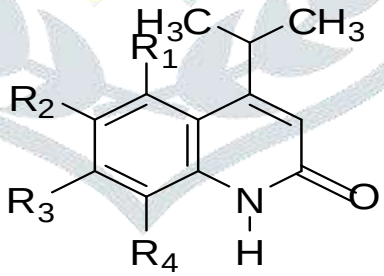

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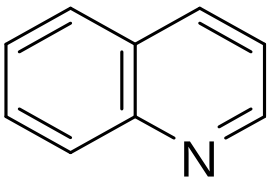

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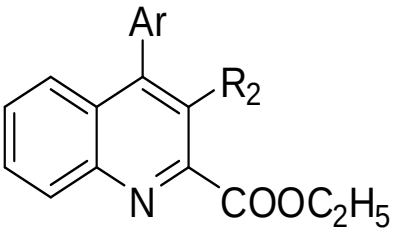

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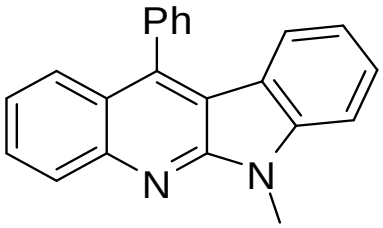

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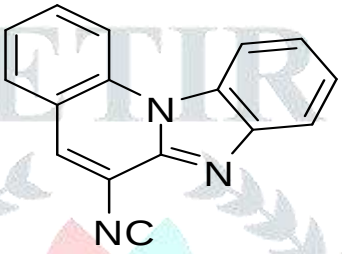

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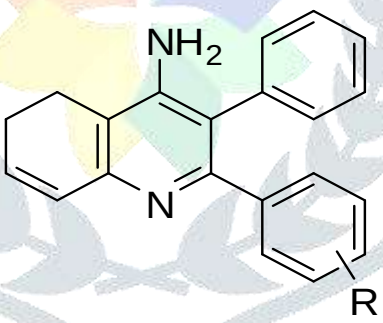

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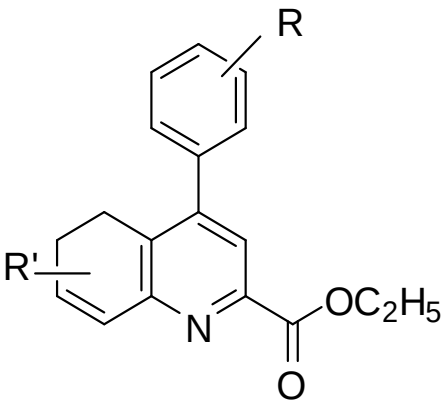

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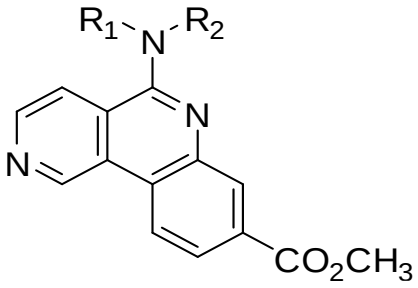

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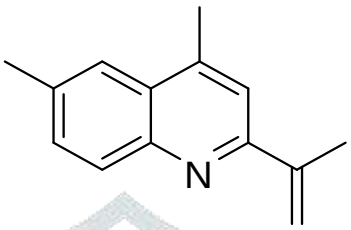

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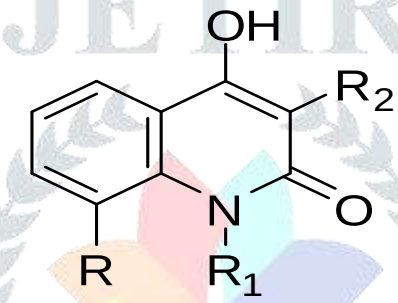

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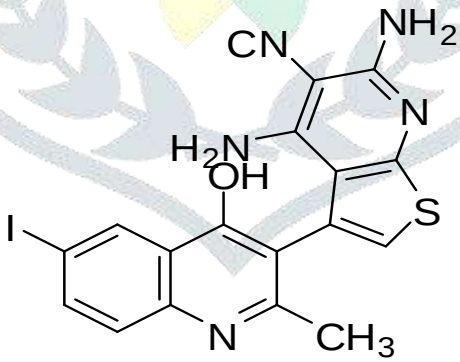

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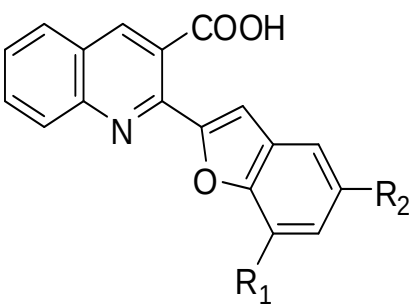

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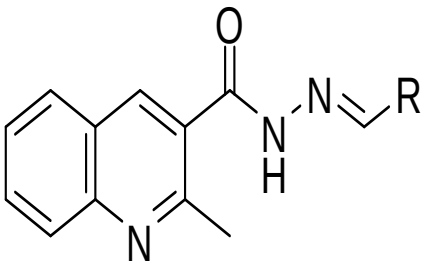

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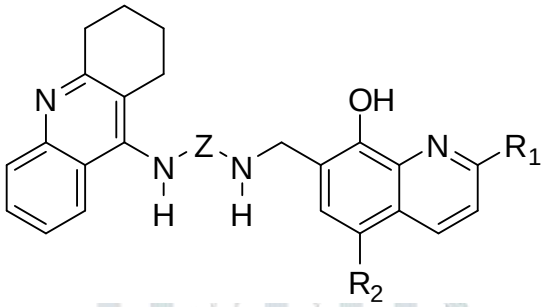

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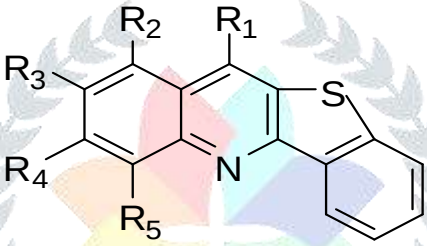

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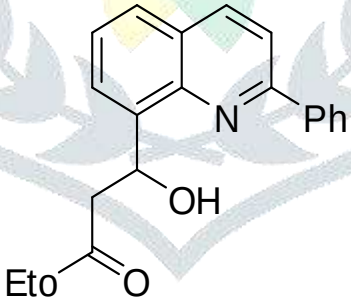

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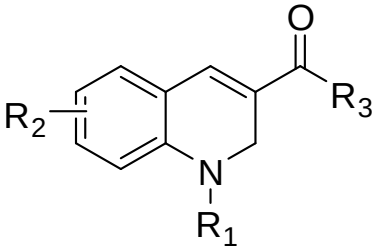

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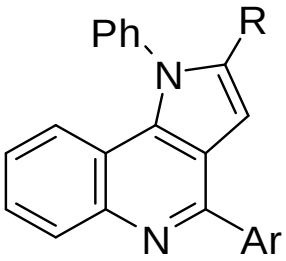

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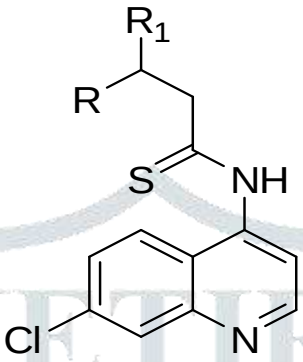

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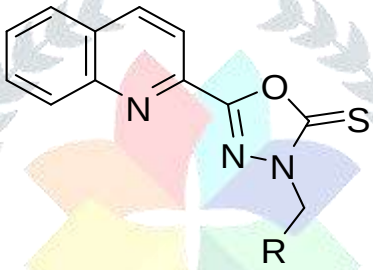

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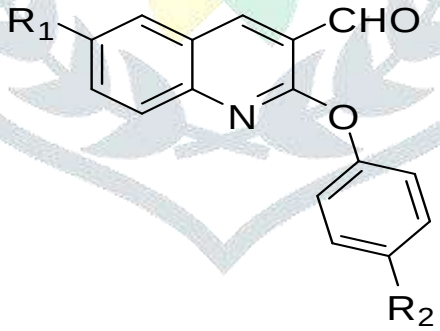

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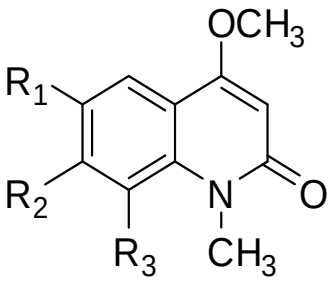

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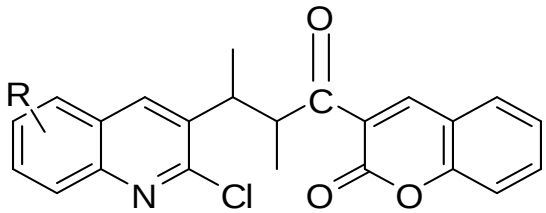

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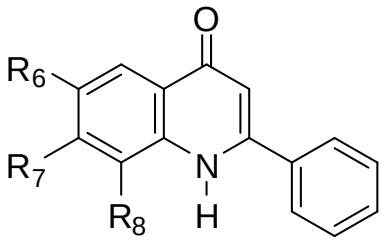

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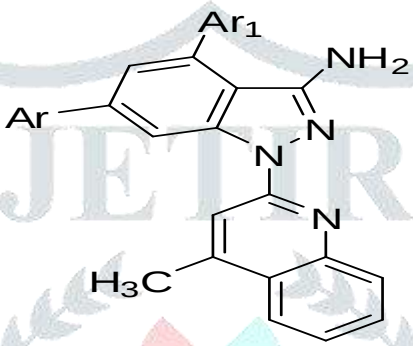

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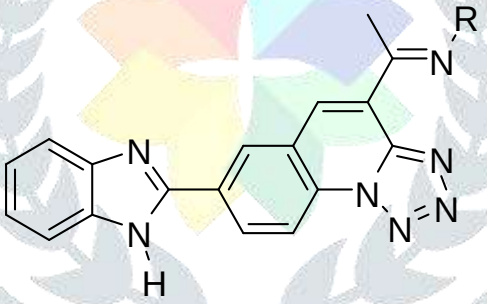

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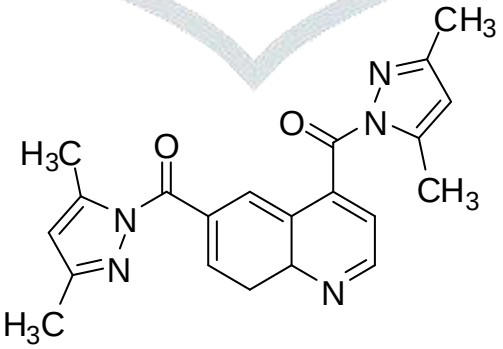

Figure:52

Conclusion: We conclude that by new synthesized derivatives would be a promising guide for the progress of pharmacological activity.

Acknowledgements

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Abbreviations

PDGF-RTK- Platelet-derived growth factor receptors.

DNA-Deoxyribonucleic acid

5-HT- 5-Hydroxytryptamine

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