

Biological Significance of Quinazolinone and Thiazolidinone Derivatives

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Abstract: The heterocyclic compounds showed pharmacological properties. Quinazolinone ring is a part of heterocyclic compounds that have carbonyl group and two nitrogen atoms. After the study of literature it has been observed that quinazolinone derivatives possess pharmacological activity such as antibacterial, antimicrobial, anti-inflammatory, anticancer activity. Many scientists and researchers have study on thiazolidinone derivatives and founded that thiazolidinone nucleus possesses pharmacological activity such as antimicrobial, anticancer, antibacterial, antifungal, anticonvulsant activity etc. The present review provides sources of quinazolinone with thiazolidinone moiety and gives the information about biological activities.

Keywords: Quinazolinone, thiazolidinone, antimicrobial, anti-inflammatory, anticancer activity.

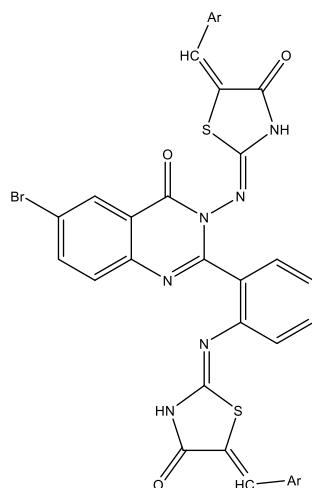
INTRODUCTION

Quinazolinone is considered a synthesis of pharmacological significance. It is a part of heterocyclic compound exhibiting large spectrum of pharmacological activity. From the study of literature survey it has shown that quinazolinone derivatives possess a variety of biological activities such as antimicrobial (Shaikh, S.M. & Wagh, M.R.R., 2024), antifungal (Tokali, F.S., 2025), anti-inflammatory (Suthar, S.K. *et al.*, 2013), anthelmintic (Patra, P.K. *et al.*, 2014) etc. Many scientists and researchers have studies on thiazolidinone moiety with quinazolinone derivatives have shown biological activity such as anticancer (Ahmed, M.F. & Magdy, N., 2018), anti-inflammatory (Senthilkumar, N. *et al.*, 2011),

cytotoxic (Abdul-Rahman, A.A.H. *et al.*, 2024), antimicrobial (Reddy, K.M.K. *et al.*, 2013) etc. This review focused on the new synthetic methods of preparation of quinazolinone derivatives with thiazolidinone moiety and biological activity of these compounds.

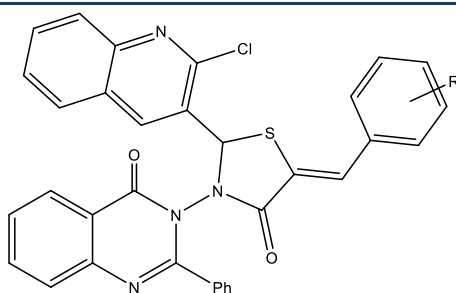
PHARMACOLOGICAL ASPECTS OF QUINAZOLINONE-THIAZOLIDINONE DERIVATIVES

Singh, A. *et al.*, 2008; have synthesized some quinazolinone derivatives with thiazolidinone moiety and screened for their antimicrobial activity against different bacteria and fungi.



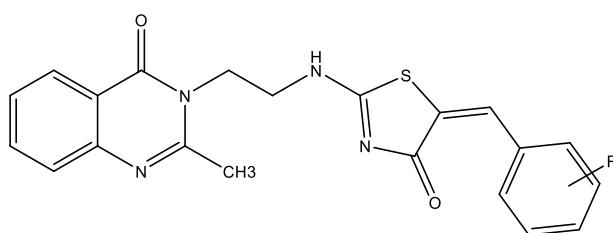
Synthesis and antimicrobial activity of novel quinazolinone-thiazolidine quinoline compounds have been reported by Desai, N. C. *et al.*, 2013. Antibacterial activity was screened against *S. aureus*, *S. pyogenes*, *E. coli*, *P. aeruginosa* and

compared with standard drug ampicillin. Antifungal activity was screened against *C. albicans*, *A. niger*, *A. clavatus* then compared with standard drug griseofulvin.



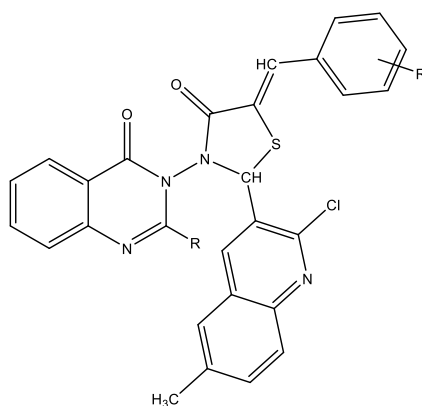
Shah, D. R. *et al.*, 2014; have synthesized novel quinazolinone derivatives with thiazolidinone moiety. They explained in vitro antimicrobial activity and antituberculosis activity. They showed

antibacterial activity against *s. aureus*, *b. cereus*, *E. coli*, *p. aeruginosa*, *k. pneumonia*, *s. typhi*, *p. vulgaris*, *s. fluxneria* and antifungal activity against *a. niger*, *c. albicans*.



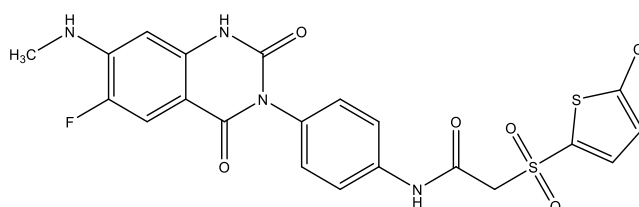
Synthesis, characterization and antimicrobial screening of quinaline based quinazolinone-4-thiazolidinone heterocycles have been reported by Desai, N. C. *et al.*, 2014. They observed

antimicrobial activity against *s. aureus*, *s. pyogenes*, *e. coli*, *p. aeruginosa*, *c. albicans*, *a. niger*, *a. clavatus*.



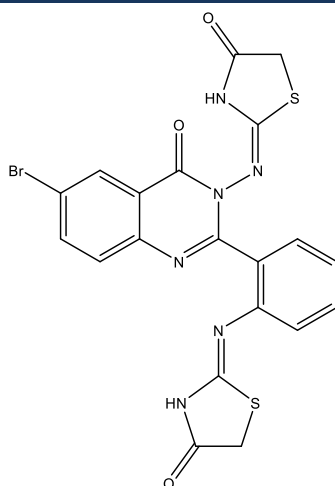
Asif, M. *et al.*, 2014; has explained chemical characteristics, synthetic methods and biological

potential of quinazoline and quinazolinone derivatives. He showed anticancer activity.



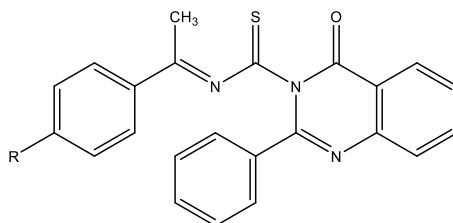
Osarodion, O. P. *et al.*, 2023; has prepared thiazolidinone derivatives with quinazolidinone moiety. He investigated antibacterial activity

against *s. aureus*, *b. species*, *a. species*, *p. aeruginosa*, *e. coli*, *k. pneumonia* then compared with standard drug ciprofloxacin.



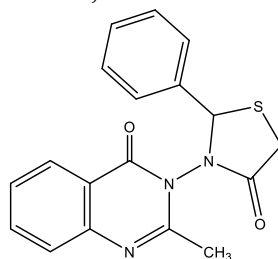
A facile synthesis, characterization and biological evaluation of novel spirothiazolidinone and quinazolinone thiazolidine derivatives have been reported by Srivastava, K. *et al.*, 2023. They observed antibacterial as well as antifungal

activity. They screened antibacterial activity against *b. subtilis*, *s. aureus*, *p. aeruginosa* and antifungal activity against *c. albicans*, *a. niger*, *a. clavatus* then compared with ampicillin and ketoconazole respectively.

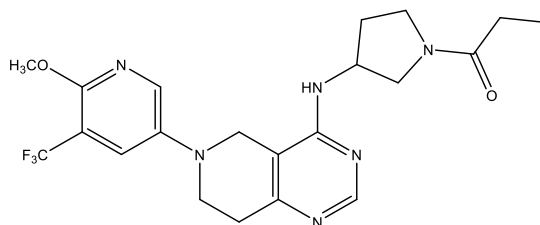


Kolageri, S. *et al.*, 2021; have synthesized 2-methyl quinazolinyl thiazolidine derivatives and explained antimicrobial activity against *E. coli*,

s. aureus and compared with standard drug chloramphenicol.

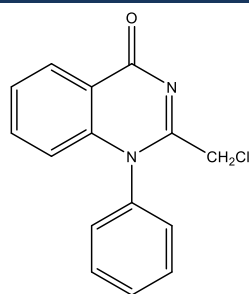


Zayed, M. F, 2023; has explained quinazolinone derivatives and observed analgesic and anti-inflammatory activity.



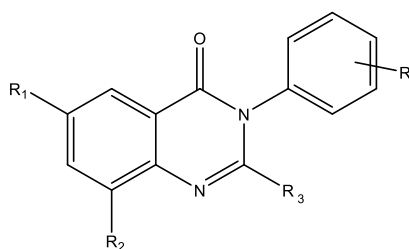
Synthesis and antimicrobial screening of some novel quinazolinone derivatives have been reported by Singh, I. R. *et al.*, 2013. They investigated antibacterial activity against

pseudomonas aeruginosa, *Escherichia coli*, and *staphylococcus aureus* and compared with standard drug.

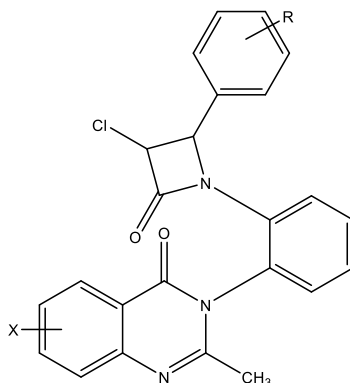


Mansouri, M. M. *et al.*, 2025; have explained design, synthesis, biological assessment and computational studies of 3-substituted phenyl

quinazolinone derivatives. They showed anticancer activity.



Rajput, C. S. *et al.*, 2013; have synthesized newer quinazolinone derivatives and explained anti-inflammatory activity.



CONCLUSION

This review focuses on synthesis and biological activities of quinazolinone with thiazolidinone derivatives. These compounds have various biological activities like anticancer, antimicrobial, anticonvulsant, antibacterial with lesser toxicity. This review article will help to give important information to scientists and researchers for the synthesis of quinazoline-thiazolidinone derivatives based drugs for soft treatment of diseases.

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